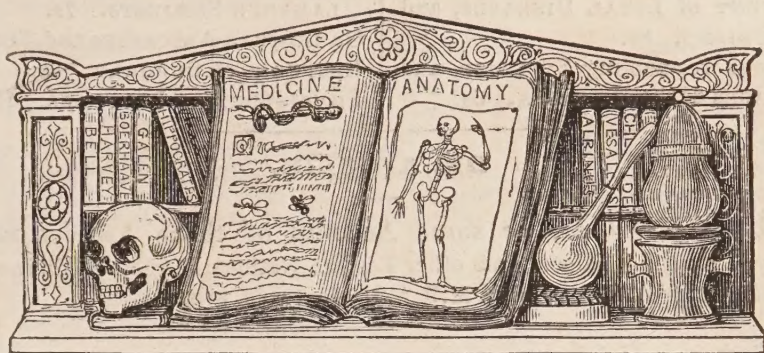


MAY 1838.

Established Works
ON
ANATOMY, MEDICINE, SURGERY,
AND THE COLLATERAL SCIENCES,



PRINTED FOR LONGMAN, ORME, BROWN, GREEN, AND LONGMANS.

NEW WORKS.

1.

HUMAN PHYSIOLOGY. By JOHN ELLIOTSON, M.D. Cantab. F.R.S.
Fifth edition. Part II. containing the Animal Functions, 8vo. 14s.

. The small remaining Part, on the Generation, Varieties, and Development of Mankind, *will appear very shortly.*

2.

HINTS to MOTHERS for the Management of Health during the Period of Pregnancy and in the Lying-in Room: with an Exposure of Popular Errors in connexion with those subjects. By THOMAS BULL, M.D. Physician-Accoucheur to the Finsbury Midwifery Institution, &c. Fcap. 8vo. 5s. cloth lettered.

3.

FLORA MEDICA; or, a Botanical Account of all the most remarkable Plants applied to Medical Practice in Great Britain and other Countries. By JOHN LINDLEY, Ph. D. F.R.S. &c. &c. The work will embrace the medicinal uses for which the plants are known, careful descriptions of them, an investigation of the evidence upon which officinal substances have been assigned to particular species, and an adjustment of the nomenclature to the most correct botanical standard. The work will be so numbered as to be capable of use as a Catalogue of the Medical Plants cultivated in Botanical Gardens, and printed in such a manner that the sequence of the matter may be varied at the pleasure of the reader.—*Nearly ready.*

4.

HINTS on the DOMESTIC MANAGEMENT of CHILDREN.
By C. J. ROBERTS, M.D. Licentiate of the Royal College of Physicians; Fellow of the Royal Medical and Chirurgical Society; Physician to the Welch Charity School, and the Infant Orphan Asylum. 12mo. 4s. cloth.

5.

VELPEAU'S ANATOMY of REGIONS. Translated from the French, by HENRY HANCOCK, Lecturer on Practical and Surgical Anatomy at the Westminster Hospital School of Medicine, and Surgeon to the Royal Universal Infirmary of Children. 8vo. 16s. cloth lettered.

6.

A TREATISE on OPERATIVE SURGERY. By W. P. COCKS, Surgeon, Author of "Illustrations of Mr. Samuel Cooper's Surgical Dictionary." 1 vol. 8vo. illustrated by Twelve Plates, illustrating 64 Surgical Operations, &c. Price 14s. cloth lettered.

MR. ABERNETHY.**SURGICAL and PHYSIOLOGICAL WORKS of J. ABERNETHY,**

F.R.S. &c. 4 vols. 8vo. 2l. 5s. 6d. Consisting of the following Treatises and Lectures, which may also be had *separately*:—

On the CONSTITUTIONAL ORIGIN AND TREATMENT of LOCAL DISEASES, and on ANEURISMS. 8s.

On DISEASES resembling SYPHILIS, and on DISEASES of the URETHRA. 6s.

On INJURIES of the HEAD, and MISCELLANEOUS SUBJECTS. 7s.

On LUMBAR ABSCESSSES and TUMORS. 6s.

LECTURES ON SURGERY. 8s.

PHYSIOLOGICAL LECTURES. 10s. 6d.

DR. AINSLIE.**MATERIA INDICA; or some Account of those Articles which are**

employed by the Hindoos, and other Eastern Nations, in their Medicine, Arts, &c.

By WHITELOW AINSLIE, M.D. M.R.A.S. In 2 vols. 8vo. 2l.

DR. ARNOTT.**ELEMENTS of PHYSICS; or Natural Philosophy, General and**

Medical, written in plain or non-technical language. By NEIL ARNOTT, M.D.

Physician Extraordinary to Her Majesty. 8vo. many Wood Engravings, 5th edit.

Vol. I. 21s.; and Vol. II. Part I. 10s. 6d.

The concluding Part of Vol. II. of the work is in progress.

DR. ABERCROMBIE.**PATHOLOGICAL and PRACTICAL RESEARCHES on DISEASES**

of the BRAIN and SPINAL CORD. By JOHN ABERCROMBIE, M.D. Oxon. and

Edin. V.P.R.S.E. &c. &c. 12mo. 3d edit. greatly enlarged, 5s. 6d.

DR. ADDISON & MR. MORGAN.**AN ESSAY on the OPERATION of POISONOUS AGENTS upon**

the LIVING BODY. By JOHN MORGAN, F.L.S. Surgeon to Guy's Hospital; and

T. ADDISON, M.D. Lecturer on the Practice of Physic at Guy's Hospital. 8vo. 5s.

DR. ALDIS.**INTRODUCTION to HOSPITAL PRACTICE, in various Complaints;**

being a Clinical Report of Fever, Gout, Rheumatism, Cholera, &c. &c.: with Remarks

on their Pathology and Treatment. With an Appendix, on Cerebral Congestion,

Apoplexy, Palsy, and Epilepsy. By C. J. B. ALDIS, M.A. M.B. & L.M. 1 vol. 8vo. 5s. 6d.

MR. BACOT.**TREATISE on SYPHILIS, in which the History, Symptoms, and**

Method of Treating every Form of that Disease, are fully considered. By

JOHN BACOT, Surgeon to the St. George's and St. James's Dispensary, &c. 8vo. 9s.

DR. BAILLIE.**MORBID ANATOMY of some of the most important Parts of the**

HUMAN BODY. By MATTHEW BAILLIE, M.D. With Observations on Diseased

Structures, by JAMES WARDROP. 12mo. 7s.

DR. BATEMAN.

PRACTICAL SYNOPSIS of CUTANEOUS DISEASES, according to the arrangement of Dr. WILLAN; exhibiting a concise View of the Diagnostic Symptoms, and the Method of Treatment. By T. BATEMAN, M.D. Seventh Edition, edited by A. TODD THOMSON, M.D. F.L.S. Professor of Materia Medica in the University College, London. 8vo. 15s.

ATLAS of DELINEATIONS of CUTANEOUS ERUPTIONS; illustrative of the Descriptions in the above Synopsis. By A. TODD THOMSON, M.D. &c. Royal 8vo. with 128 graphic Illustrations, carefully coloured on 29 coloured Plates, 3l. 3s.

The object of this Atlas is to place in the hands of the Student a substitute for the valuable but expensive Delineations of Dr. Bateman. The editor has endeavoured to render these Plates eminently useful to the Student, by marking the commencement, progress, and termination of each Eruption, as far as can be accomplished in a single representation.

DELINEATIONS of the CUTANEOUS DISEASES comprised in the CLASSIFICATION of the late DR. WILLAN. By T. BATEMAN, M.D. &c. 4to. with 72 coloured Plates, 12l. 12s.

SIR GEORGE BALLINGALL.

OUTLINES of the COURSE of LECTURES on MILITARY SURGERY, delivered in the University of Edinburgh. By Sir GEO. BALLINGALL, M.D. F.R.S.E. &c. &c. 8vo. 18s.

DR. T. R. BECK & DR. J. B. BECK.

ELEMENTS of MEDICAL JURISPRUDENCE. By T. R. BECK, M.D. Professor of the Institutes of Medicine, and Lecturer on Medical Jurisprudence, in the College of Physicians and Surgeons of the Western District of the State of New York, &c.; and J. B. BECK, M.D. Professor of Materia Medica and Medical Jurisprudence in the College of Physicians and Surgeons, New York, one of the Physicians to the New York Hospital, &c. &c. 8vo. 5th edit. brought down to the present time, including the Notes of Dr. Dunlop and Dr. Darwall. 21s.

"Beck's Medical Jurisprudence, in its present enlarged form, has been rendered quite an Encyclopædia on the subject: it is an admirable book of reference, and ought to be in the hands of every member of the profession."—MED. GAZ.

SIR CHARLES BELL,

K.G.H. F.R.S.L. & E., PROFESSOR OF SURGERY IN THE UNIVERSITY OF EDINBURGH, &c.

ANATOMY and PHYSIOLOGY of the HUMAN BODY. By JOHN and CHARLES BELL. 7th Edition, systematized by Sir C. BELL. 3 vols. 8vo. numerous Engravings, 2l. 12s. 6d.

ENGRAVINGS of the ARTERIES, illustrative of the above Work. By Sir C. BELL. Imperial 8vo. 15s.; coloured, 21s.

By the same Author,

ILLUSTRATIONS of the GREAT OPERATIONS of SURGERY: Trepan—Hernia—Amputation—Aneurism—Lithotomy. 4to. with 20 Plates, 3l. 15s. plain; 5l. 5s. col'd. The Parts *separately*, 15s. plain; 21s. coloured.

NERVOUS SYSTEM of the HUMAN BODY. 3d edit. 8vo. with 15 Engravings, 24s.

DISEASES of the URETHRA, PROSTATE, RECTUM, &c. 8vo. 13s. 6d.

ENGRAVINGS from SPECIMENS of MORBID PARTS in the Author's Collection; selected from the divisions, Urethra—Vesica—Ren—Morbosa—Læsa, &c. Folio, 36s.

INSTITUTES of SURGERY; for the Use of Students. 2 vols. post 8vo. 15s.

DR. BENNETT.**THE NATURE and TREATMENT of DISEASES of the EAR.**

By Dr. WILLIAM KRAMER. Translated from the German, with the latest improvements of the Author since the last German edition, by J. R. BENNETT, &c. &c.
1 vol. 8vo. with Plates, 10s. 6d. boards.

DR. BLACKALL.**OBSERVATIONS on the NATURE and CURE of DROPSIES.**

By JOHN BLACKALL, M.D. 8vo. 4th edit. 10s. 6d.

DR. BRIGHT.

REPORTS of MEDICAL CASES : selected with a view of illustrating the Symptoms and Cure of Diseases by a reference to Morbid Anatomy. By RICHARD BRIGHT, M.D. F.R.S. Physician Extraordinary to Her Majesty, and one of the Physicians to Guy's Hospital. 4to.

Vol. I. embraces Dropsy, Inflammation of the Lungs, Phthisis, and Fever; with 16 col'd Plates, 4l. 4s.

Vol. II. contains Diseases of the Brain and Nervous System; with 38 Plates, 9l. 9s. col'd.

DRS. BRIGHT & ADDISON.**ELEMENTS of the PRACTICE of PHYSIC.** By RICHARD BRIGHT,

M.D. F.R.S. Physician Extraordinary to her Majesty; and THOMAS ADDISON, M.D. Lecturers on the Practice of Physic at Guy's Hospital. 8vo.

Fasciculus I. containing Fever, price 4s.

Fasciculus II. price 5s. containing Inflammation, Inflammatory Fever, Catarrh, Influenza, Bronchitis, Laryngitis, Croup, Hooping Cough, Dilatation of Bronchi, Pulmonary Emphysema, Pneumo-thorax, Pleuritis, Empyema, Phthisis, Pericarditis, Organic Diseases of the Heart, Dilatation of the Aorta.

SIR BENJAMIN C. BRODIE.**LECTURES illustrative of certain Local NERVOUS AFFECTIONS.**

By Sir BENJAMIN C. BRODIE, Bart. F.R.S. Serjeant Surgeon to Her Majesty, and Surgeon to St. George's Hospital. 8vo. price 4s.

By the same Author,

LECTURES on DISEASES of the URINARY ORGANS. 2d edit. 8s. bds.

PATHOLOGICAL and SURGICAL OBSERVATIONS on DISEASES of the JOINTS. 3d edit. 10s. 6d.

DR. BURNE.**PRACTICAL TREATISE on the TYPHUS or ADYNAMIC FEVER.**

By J. BURNE, M.D. &c. 8vo. 7s. 6d.

PROFESSOR BURNS.**PRINCIPLES of MIDWIFERY ;** including the Diseases of Women

and Children. By JOHN BURNS, M.D. Regius Professor of Surgery, Glasgow. 8vo. 9th edit. greatly enlarged, 16s. bds.

. The emendations in this edition are numerous, and the additions extend to nearly fifty pages.

By the same Author,

PRINCIPLES of SURGERY, Vol. I. containing Inflammation, Tumors, Aneurisms, &c. 8vo. 14s.

MR. CARMICHAEL.

ESSAY on VENEREAL DISEASES, and the Uses of MERCURY
in their Treatment. With Drawings of the Forms of Venereal Eruptions. By
RICHARD CARMICHAEL, M.R.I.A. 2d edition, 8vo. 16s.

DR. CARSWELL.

ILLUSTRATIONS of the ELEMENTARY FORMS of DISEASE.
Imperial 4to. with col'd Figures of the natural size, and descriptive Letterpress. By
R. CARSWELL, M.D. Prof. of Pathological Anatomy in the London University Coll.
Complete in 12 Parts.

Fas. I. TUBERCLE ;	Fas. IV. MELANOMA ;	Fas. VIII. PUS ;
II. } CARCINOMA ;	V. SOFTENING ;	IX. HYPERTROPHY ;
& } CARCINOMA ;	VI. HÆMORRHAGE ;	X. ATROPHY ;
III. }	VII. MORTIFICATION ;	XI. ANALOGOUS TISSUES.
		XII. INFLAMMATION.

15s. each.

MR. CHITTY.

PRACTICAL TREATISE on MEDICAL JURISPRUDENCE ;
with all the Laws relating to Medical Practitioners, and Explanatory Notes. By
J. CHITTY, Esq. Barrister at Law. Royal 8vo. Part I. 21s.

DR. CHRISTISON.

TREATISE on POISONS, in relation to Medical Jurisprudence,
Physiology, and the Practice of Physic. By R. CHRISTISON, M.D. 8vo. 3d edition,
enlarged, corrected, and improved, 18s. bds.

DR. FLEETWOOD CHURCHILL.

OUTLINES of the PRINCIPAL DISEASES of FEMALES. By
FLEETWOOD CHURCHILL, M.D. 1 vol. 8vo. 10s. 6d. bds.

MR. CLARK.

A PRACTICAL and FAMILIAR TREATISE on the TEETH and
DENTISM. By J. PATERSON CLARK, M.A. Dentist. Price 10s.

MR. LE GROS CLARK.

THE PRACTICAL ANATOMY & ELEMENTARY PHYSIOLOGY
of the NERVOUS SYSTEM ; designed for the use of Students in the Dissecting
Room. By F. LE GROS CLARK, Demonstrator of Anatomy in St. Thomas's Hospital.
9s. bds.

SIR C. M. CLARKE.

OBSERVATIONS on the DISORDERS of FEMALES. Illustrated
by Plates. By Sir CHARLES MANSFIELD CLARKE, Bart. M.D. F.R.S. Physician in
Ordinary to the Queen Dowager. 3d edition, 2 vols. royal 8vo. 11. 16s.

DR. COLLINS.

A PRACTICAL TREATISE on MIDWIFERY ; containing the
Result of SIXTEEN THOUSAND SIX HUNDRED and FIFTY-FOUR BIRTHS, occurring
in the Dublin Lying-in Hospital, during a period of Seven Years, commencing
November 1826. By ROBERT COLLINS, M.D. late Master of the Institution. 8vo.
price 12s. 6d.

DR. CONQUEST.

OUTLINES of MIDWIFERY, developing its Principles and Practice. Intended as a Text Book for Students. By J. T. CONQUEST, M.D. F.L.S. 6th edit. carefully revised, and illustrated with Engravings, 12mo. 7s. 6d.

SIR ASTLEY COOPER.

ANATOMY and SURGICAL TREATMENT of ABDOMINAL HERNIA. In Two Parts. By Sir ASTLEY COOPER, Bart. F.R.S. &c. Edited by C. ASTON KEY, Senior Surgeon to Guy's Hospital. 2d edition, in folio, with additional plates, 5l. 5s.

By the same Author,

OBSERVATIONS on the DISEASES of the TESTIS. 4to. with Plates, price 3l. 3s. col'd; or 1l. 11s. 6d. plain.

ANATOMY of the THYMUS GLAND. 4to. with Five Plates, 14s.

MR. SAMUEL COOPER.

FIRST LINES of the PRACTICE of SURGERY; explaining and illustrating the Doctrines relative to the Principles, Practice, and Operations of Surgery, as taught by S. COOPER, Surgeon to the University College Hospital, Professor of Surgery and Clinical Surgery in the University College, London, &c.

By the same Author,

DICTIONARY of PRACTICAL SURGERY. 1 thick vol. 8vo. 28s.

ILLUSTRATIONS of Ditto, in above 400 Plates, with Anatomical Descriptions. By W. P. COCKS, Surgeon. 2 vols. 8vo. Vol. I. 2l. 2s.; Vol. II. 3l. 7s. 6d.

DR. COPLAND.

A DICTIONARY of PRACTICAL MEDICINE. By J. COPLAND. M.D. F.R.S. &c. 8vo. Parts 1, 2, 3, and 4, price 9s. each.

By the same Author,

PESTILENTIAL CHOLERA: its Nature, Prevention, and Cure. 12mo. 5s.

MR. COULSON.

ON DISEASES of the BLADDER. By WILLIAM COULSON, Surgeon. Post 8vo. 5s.

By the same Author,

ON DISEASES of the HIP-JOINT. With plain and coloured Plates. 2d edition, enlarged and improved.—*In the press.*

DR. CRAIGIE.

ELEMENTS of the PRACTICE of PHYSIC, presenting a view of the Present State of Special Pathology and Therapeutics. By DAVID CRAIGIE, M.D. F.R.S.E. &c. Vol. I. 8vo. 18s.

DR. CULLEN.

FIRST LINES of the PRACTICE of PHYSIC. By W. CULLEN, M.D. With an Appendix, commenced by the Author, and continued and completed by J. C. GREGORY, M.D. F.R.S.E. &c. 2 vols. 8vo. 24s.

DR. CUMMIN.

THE PROOFS of INFANTICIDE CONSIDERED; being a Popular Summary of the present state of Medico-Legal Knowledge on the Subject of CHILD-MURDER. By WILLIAM CUMMIN, M.D. late Lecturer on Forensic Medicine at the Aldersgate School of Medicine, &c. Fcap. 8vo. 3s. 6d.

MR. CURTIS.

A TREATISE on the DISEASES of the EAR. By J. H. CURTIS, Esq. Aurist and Oculist. 6th. edit. Plates, price 7s. 6d. bds.

By the same Author,

TREATISE on the DISEASES of the EYE. 2d edit. Plates, price 7s. 6d. bds.

ESSAY on the DEAF and DUMB. Plates, price 10s. 6d. bds.

MAP of the PRINCIPAL NERVES and BLOOD-VESSELS of the HEAD. Price 5s. coloured.

MAP of the ANATOMY of the EAR. Price 5s. coloured.

CHART of the DISEASES of the EAR. Price 2s. 6d.; small, 1s.

MAP of the ANATOMY of the EYE. Price 5s. coloured.

CHART of the DISEASES of the EYE. Price 2s. 6d.

DR. CUTLER.

POPULAR SURGERY: being plain Directions offered to the Public at large, for affording Relief in all Cases of Accident and dangerous Disease, Poisoning, &c., in the absence of a regular Practitioner. From the French of M. MAYOR. With Notes and Additions, by THOMAS CUTLER, M.D. 4s. bds.

DR. THOMAS DAVIES.

LECTURES on the DISEASES of the LUNGS and HEART, delivered at the London Hospital, by THOMAS DAVIES, M.R.C.P. &c. &c. 8vo. 12s.

DR. DOWSON.

INTRODUCTION to the STUDY and PRACTICE of MEDICINE. By JOHN DOWSON, M.D. 12mo. 4s. 6d.

MR. H. EARLE.

TWO LECTURES on the PRIMARY and SECONDARY TREATMENT of BURNS. By HENRY EARLE, F.R.S. Surgeon Extraordinary to Her Majesty, &c. With Two Plates, 2s. 6d.

MR. J. W. EARLE.

NEW EXPOSITION of the FUNCTIONS of the NERVES. By JAMES WILLIAM EARLE. 8vo. Part I. 7s. 6d.

MR. ELKINGTON.

A PRACTICAL DEMONSTRATION of the HUMAN SKELETON.

By GEORGE ELKINGTON, M.R.C.S. Fcap. 8vo. 7s.

DR. ELLIOTSON.

HUMAN PHYSIOLOGY. By JOHN ELLIOTSON, M.D. Cantab. F.R.S.

With which is incorporated much of the elementary part of the INSTITUTIONES PHYSIOLOGICÆ of J. F. BLUMENBACH, Professor in the University of Göttingen. 5th edit. with numerous Woodcuts. Part I. price 10s. 6d.

Part II. Animal Functions, 14s.

Part III. (the last) *nearly ready.*

DR. FARRE.

TREATISE on some **PRACTICAL POINTS** relating to the **DISEASES** of the **EYE**. By the late J. C. SAUNDERS. Edited by J. R. FARRE, M.D. 3d edit. 14s. plain, and 25s. coloured.

JOURNAL of **MORBID ANATOMY**, &c. Edited by J. R. FARRE, M.D. 8vo. with Plates. Part I. 6s.

By the same Author,

APOLOGY for **BRITISH ANATOMY**. 4to. with 2 beautiful Lithographic Illustrations, 9s. plain; 12s. coloured.

MR. D. FOX.

THE SIGNS, DISORDERS, and MANAGEMENT of **PREGNANCY**; the Treatment to be adopted during and after Confinement; and the Management and Disorders of Children. Written expressly for the Use of Females. By DOUGLAS FOX, M.R.C.S. and one of the Surgeons to the Derbyshire General Infirmary. 8vo. 6s.

DR. MASON GOOD.

THE STUDY of MEDICINE. By JOHN MASON GOOD, M.D. F.R.S.

4th edit. improved from the Author's MSS. and by reference to the latest advances in Physiology, Pathology, and Practice. By SAMUEL COOPER, Professor of Surgery in the London University College. 4 thick vols. 8vo. 3l. 3s.

DR. GOOCH.

PRACTICAL COMPENDIUM of MIDWIFERY. By the late ROBERT GOOCH, M.D. Prepared for publication by GEORGE SKINNER, M.R.S.L. 12mo. 7s.

DR. HAMILTON.

PRACTICAL OBSERVATIONS on Various Subjects relating to **MIDWIFERY**. By JAMES HAMILTON, M.D. F.R.S.E. Prof. of Medicine, &c. in the University of Edinburgh. 8vo. Parts I. and II. 7s. 6d. each.

SIR S. L. HAMMICK.

PRACTICAL REMARKS on AMPUTATIONS, FRACTURES, and STRICTURES of the URETHRA. By Sir STEPHEN LOVE HAMMICK, Surgeon Extraordinary to his late Majesty, &c. 8vo. 9s.

DR. HARRISON.

THE DUBLIN DISSECTOR; or, Manual of Anatomy. Comprising a Description of the Bones, Muscles, Nerves, and Viscera; also the relative Anatomy of the different Regions of the Human Body; together with the Elements of Pathology. By ROBERT HARRISON, A.M. M.B. T.C.D. &c. 4th edit. considerably enlarged and improved, 12mo. 9s. bds.

DR. HOOPER.

MEDICAL DICTIONARY; containing an Explanation of the Terms in Anatomy, Botany, Chemistry, Materia Medica, Midwifery, Mineralogy, Pharmacy, Physiology, Practice of Physic, Surgery, &c. By ROBERT HOOPER, M.D. F.L.S. Physician to St. Marylebone Infirmary, &c. 1 large vol. 6th edit. 28s.

By the same Author,

MORBID ANATOMY of the HUMAN BRAIN; illustrated by coloured Engravings. Imp. 4to. 2l. 12s. 6d.

MORBID ANATOMY of the HUMAN UTERUS and its APPENDAGES. Imp. 4to. with 21 col'd Plates, 3l. 3s.

JOHN HUNTER.

THE WORKS of JOHN HUNTER, F.R.S.; with Notes. Edited by JAMES F. PALMER, Senior Surgeon to the St. George's and St. James's Dispensary; Fellow of the Royal Medical and Chirurgical Society of London, &c. 4 vols. 8vo. illustrated by a volume of Plates in 4to. £3. 10s.

MR. INGLEBY.

FACTS and CASES in OBSTETRIC MEDICINE; with Observations on some of the most important Diseases incidental to Females. By JOHN INGLEBY, M.R.C.S. Lecturer on Midwifery, Birmingham. 8vo. 9s.

By the same Author,

PRACTICAL TREATISE on UTERINE HÆMORRHAGE, in connexion with PARTURITION. 8vo.

DR. JEWEL.

LONDON PRACTICE of MIDWIFERY: including the most important Diseases of Women and Children. Chiefly designed for the Use of Students and early Practitioners. With Alterations and Additions, by G. JEWEL, M.D. Senior Physician-Accoucheur to the St. George's and James's Dispensary; Lecturer on Midwifery, &c. 12mo. 6th edit. 6s. 6d.

DR. KAY.

THE PHYSIOLOGY, PATHOLOGY, and TREATMENT of ASPHYXIA; including Suspended Animation in New-born Children, and from Hanging, Drowning, Wounds of the Chest, &c. By J. P. KAY, M.D. formerly President of the Royal Medical Society, Edinburgh. 8vo. 10s. 6d.

MR. C. ASTON KEY.

MEMOIR on the ADVANTAGES and PRACTICABILITY of DIVIDING the STRICTURE in STRANGULATED HERNIA on the outside of the SAC. By C. ASTON KEY, Surgeon to Guy's Hospital, Lecturer on Surgery, &c. With Cases, and 3 col'd Drawings. 7s. 6d.

MR. KNOX.

THE ANATOMIST'S INSTRUCTOR and MUSEUM COMPANION: being Practical Directions for the Formation and subsequent Management of Anatomical Museums. By FREDERICK JOHN KNOX. 4s. 6d.

DR. LATHAM.

LECTURES on SUBJECTS connected with CLINICAL MEDICINE; delivered at St. Bartholomew's Hospital. By Dr. LATHAM, Physician Extraordinary to Her Majesty. 1 vol. 12mo. 6s. 6d.

MR. LEE.

AN ACCOUNT of the MOST FREQUENTED WATERING PLACES on the CONTINENT, and of the Medicinal Application of their Mineral Springs: with Tables of Analysis, and an Appendix, on the principal Mineral Waters of England. By EDWIN LEE, M.R.C.S. Author of Observations on the Continental Medical Institutions. 1 vol. post 8vo. 7s. 6d.

MR. LISTON.

ELEMENTS of SURGERY. By ROBERT LISTON, Surgeon to the North London Hospital. 1 thick vol. 8vo. 21s.

MR. LUCAS.

A CONCISE ANATOMICAL DESCRIPTION of the ARTERIES of the HUMAN BODY: together with full directions for cutting down upon and securing the several arterial trunks. For the Use of Students in Anatomy. By P. BENNETT LUCAS, Member of the Royal College of Surgeons, London. 4s. 6d. bds.

DR. MACAULAY.

DICTIONARY of MEDICINE, designed for Popular Use.

By ALEXANDER MACAULAY, M.D. 8vo. New Edition, 14s.

DR. MACBRAIRE.

A SYSTEM of MEDICAL NOSOLOGY. By J. MACBRAIRE,
M.D.L.E. &c. &c. 5s.

DR. MACKENZIE.

A PRACTICAL TREATISE on DISEASES of the EYE. By
WILLIAM MACKENZIE, M.D. Lecturer on the Eye in the University of Glasgow.
2d edition, in a thick volume, 8vo. with Copperplates, and above 100 Woodcuts, 25s.

By the same Author,

DESCRIPTION of the HUMAN MUSCLES; with a Table of their combined
Actions, &c. 3s.

DR. MACKINTOSH.

ELEMENTS of PATHOLOGY and PRACTICE of PHYSIC. By
J. MACKINTOSH, M.D. Acting Surgeon to the Ordnance in North Britain, &c.
2 vols. 8vo. 3d edit. 31s. 6d.

MR. MACLEAN.

ILLUSTRATIONS of TEETHING; or a Treatise on the Progress
and Shedding of the Human Teeth, to the completion of the permanent set. By
R. MACLEAN, Dentist. Royal 8vo. with plates, 10s. plain; and 12s. col'd.

M. MAGENDIE.

ELEMENTARY COMPENDIUM of PHYSIOLOGY, for the use
of Students. By F. MAGENDIE, M.D. &c. From the French, with Notes, Tables,
&c. by E. MILLIGAN, M.D. &c. 4th edition, greatly enlarged, 8vo. 21s.

PROFESSOR MAUNSELL.

THE DUBLIN PRACTICE of MIDWIFERY. By H. MAUNSELL,
M.D. Professor of Midwifery in the Royal College of Surgeons in Ireland. 12mo. 5s.

PROFESSORS MAUNSELL & EVANSON.

PRACTICAL TREATISE on the MANAGEMENT and DISEASES
of CHILDREN. By HENRY MAUNSELL, M.D. &c. and R. T. EVANSON, M.D.
Professors in the Royal College of Surgeons in Ireland. 2d edition, much enlarged,
8vo. 10s. 6d.

DR. M'CORMAC.

AN EXPOSITION of the NATURE, TREATMENT, and
PREVENTION of CONTINUED FEVER. By H. M'CORMAC, M.D. M.R.C.S.E.
8vo. 6s.

MEDICAL VOCABULARY.

A MEDICAL VOCABULARY; or, Explanation of all Names, Synonymes, Terms, and Phrases, used in Medicine, Surgery, and the relative branches of Medical Science; giving the direct Derivation, and Directions for the proper Pronunciation of each. Intended chiefly as a book of reference for the Student, but also adapted for general use.

By a **MEDICAL PRACTITIONER**. 18mo. 4s. 6d.

MEDICAL AND CHIRURGICAL SOCIETY OF LONDON.

TRANSACTIONS of the **MEDICAL & CHIRURGICAL SOCIETY** of **LONDON**; comprising a mass of valuable and important Papers on Medicine and Surgery. Vol. XX. 8vo. with Engravings, price 15s. bds.

MR. MIDDLEMORE.

A TREATISE on the **DISEASES** of **EYE** and its **APPENDAGES**.
By **R. MIDDLEMORE**, M.R.C.S. Surgeon to the Birmingham Eye Infirmary, &c.
2 thick vols. 8vo. 35s.

DR. MURRAY.

DISSERTATION on the **INFLUENCE** of **HEAT** and **HUMIDITY**;
with Practical Observations on the Inhalation of Iodine and various Vapours, in Consumption, Catarrh, Croup, Asthma, and other Diseases.

By **JAMES MURRAY**, M.D. &c. 10s. 6d. cloth.

DR. OKE.

PRACTICAL OBSERVATIONS on the **IMMEDIATE TREATMENT** of the **PRINCIPAL EMERGENCIES** that occur in **SURGERY** and **MIDWIFERY**, systematically arranged.

By **W. S. OKE**, M.D. Part I. 8vo. 8s.; Part II. 6s.

DR. PALMER.

A DICTIONARY of **TERMS** employed by the **FRENCH**, in Anatomy, Physiology, Pathology, Practical Medicine, Surgery, Midwifery, Pharmacy, Medical Zoology, Botany, and Chemistry; with their Derivations from the Greek and Latin; &c. &c. By **SHIRLEY PALMER**, M.D. formerly of Tamworth.

Parts I. and II. 6s. each.—To be completed in Three Parts.

MR. LANGSTON PARKER.

THE STOMACH in its **MORBID STATES**; being a Practical Enquiry into the Nature and Treatment of Diseases of that Organ. By **LANGSTON PARKER**, Surgeon. 8vo. 10s. 6d. boards.

MR. PARKES.

THE CHEMICAL CATECHISM. By the late **SAMUEL PARKES**, F.L.G. and W.S. &c. Author of "Chemical Essays," "Rudiments of Chemistry," &c. Adapted to the present state of Chemical Science.

By **E. W. BRAYLEY**, Jun. A.L.S. of the London Institution. 13th edition, 8vo. 15s.

Also, by the late SAMUEL PARKES,

RUDIMENTS of **CHEMISTRY**. 4th edition, 18mo. 7s. boards.

CHEMICAL ESSAYS. 3d edition. By **J. W. HODGETTS**. 8vo. 18s. boards.

MR. PERCIVALL.

ANATOMY of the HORSE, embracing the Structure of the FOOT.
By WILLIAM PERCIVALL, M.R.C.S. Veterinary Surgeon in the 1st Life Guards.
8vo. 20s.

By the same Author,

HIPPOPATHOLOGY: a Systematic Treatise on the Disorders and Lameness of the Horse. With Woodcuts, 8vo. Vol. I. 10s. 6d.

DR. WILSON PHILIP.

TREATISE on the MEANS of PRESERVING HEALTH, and particularly the prevention of Organic Diseases.

By A. P. WILSON PHILIP, M.D. F.R.S.L. & E. 8vo. 12s.

MR. REES.

A TREATISE on the ANALYSIS of BLOOD and URINE, in Health and Disease: with Directions for the Analysis of Urinary Calculi. By G. O. REES. Intended as an Introduction to Animal Analysis, for the use of the Medical Profession. 1 vol. 8vo. 5s. 6d.

By the same Author, translated from the French,

THE ANALYSIS of INORGANIC BODIES. By J. J. BERZELIUS. 12mo. 5s.

M. RICHERAND.

ELEMENTS of PHYSIOLOGY. By A. RICHERAND. Fifth Edition. Translated from the French, and supplied with Notes and a copious Appendix, by JAMES COPLAND, M.D. 8vo. 2d. edit. 18s.

MR. RYLAND.

A TREATISE on the DISEASE and INJURIES of the LARYNX and TRACHEA. By FREDERICK RYLAND, Surgeon to the Town Infirmary, Birmingham. 8vo. with Plates, plain and coloured, price 18s. boards.

MR. SANDWITH.

INTRODUCTION to ANATOMY and PHYSIOLOGY: for General Readers, Young Persons, and Junior Medical Students.

By T. SANDWITH, Surgeon. Plates, 7s. 6d.

MR. SCOTT.

SURGICAL OBSERVATIONS on the TREATMENT of CHRONIC INFLAMMATION in various Structures; particularly as exemplified in the Diseases of the Joints. By JOHN SCOTT, Surgeon to the London Hospital, &c. 8vo. 7s. 6d.

By the same Author,

CASES of TIC DOULOUREUX, and other FORMS of NEURALGIA. 8vo. 2s. 6d.

SIR CHARLES SCUDAMORE.**TREATISE on the NATURE and CURE of GOUT and GRAVEL.**

By Sir C. SCUDAMORE, M.D. F.R.S. Large 8vo. 4th edit. 20s. bds.

By the same Author,

TREATISE on the NATURE and CURE of RHEUMATISM. 15s.

CASES illustrating and confirming the Remedial Power of the Inhalation of IODINE and CONIUM, in TUBERCULAR PHTHISIS and various Disorders of the Lungs. 8vo. 2d edit. 7s. 6d.

TREATISE on the MINERAL WATERS of BUXTON, TUNBRIDGE WELLS, BATH, CHELTENHAM, the BEULAH SPA, (Norwood), &c. 2d edit. 8s.

OBSERVATIONS on LAENNEC'S METHOD of forming a DIAGNOSIS of the DISEASES of the CHEST by means of the Stethoscope. 5s.

FURTHER EXAMINATION of the PRINCIPLES of the TREATMENT of GOUT; with Observations on Colchicum. 8vo. 2d edit. 6s.

ESSAY on the BLOOD. 8vo. 6s.

PRINCIPLES of the TREATMENT of GOUT; with a further Examination of the Effects of Colchicum as a Remedy; and some Observations on the Use of Veratria in that Disease. 8vo. 2s. 6d.

DR. SEYMOUR,

PHYSICIAN TO ST. GEORGE'S HOSPITAL; CONSULTING PHYSICIAN TO THE SEAMAN'S HOSPITAL; AND PHYSICIAN IN ORDINARY TO H. R. H. THE DUKE OF SUSSEX.

THE NATURE and TREATMENT of DROPSY; considered especially in reference to the Diseases of the Internal Organs of the body which most commonly produce it. Parts 1 and 2, Anasarca and Ascites. To which is added, an Appendix, containing a Translation of the Work of Dr. Geromini on Dropsy, from the original Italian. By EDWARD J. SEYMOUR, M.D. 1 vol. 8vo. 6s. bds.

By the same Author,

ILLUSTRATIONS of some of the PRINCIPAL DISEASES of the OVARIA, their TREATMENT, &c. 8vo. with an Atlas of 14 Engravings in folio, 21s.; India Paper, 31s. 6d.

OBSERVATIONS on the MEDICAL TREATMENT of INSANITY. 8vo. 5s.

MR. SHAW.

NATURE and TREATMENT of the various DISTORTIONS to which the SPINE and BONES of the CHEST are subject.

By JOHN SHAW. 8vo. 10s. 6d.

MR. SKEY.

A NEW MODE of TREATMENT employed in the CURE of various forms of ULCER and GRANULATING WOUNDS. By FREDERIC C. SKEY, F.R.S. Assistant Surgeon to St. Bartholomew's Hospital, Lecturer on Surgery at the Aldersgate School of Medicine, &c. 8vo. price 5s. in cloth.

DR. SOUTHWOOD SMITH.

SYSTEMATIC TREATISE on FEVER. By SOUTHWOOD SMITH, M.D. Physician to the London Fever Hospital. 8vo. 14s.

MR. SOLLY.

THE HUMAN BRAIN: its Configuration, Structure, Development, and Physiology, illustrated by references to the Nervous System in the lower orders of Animals. By SAMUEL SOLLY, Lecturer on Anatomy and Physiology at St. Thomas's Hospital. With 12 Plates, 12s. 6d. cloth.

MR. SPENDER.

OBSERVATIONS on the **CAUSES** and **TREATMENT** of **ULCEROUS DISEASES** of the **LEG.** By **J. C. SPENDER, M.R.C.S.L.** 1 vol. 8vo. 7s. 6d.

MR. STAFFORD.

ON PERFORATION and **DIVISION** of **PERMANENT STRICTURE** of the **URETHRA** by the **LANCETTED STILETTES**; with **Observations** on the **Nature** and **Treatment** of **Spasmodic** and **Inflammatory Stricture**, and on various other **Urethral Affections.** By **R. A. STAFFORD, Surgeon** to the **St. Marylebone Infirmary, Member** of the **Royal College of Surgeons, &c.** 8vo. 3d edit. greatly enlarged and improved, 9s.

MR. STANLEY.

ACCOUNT of the **MODE** of **PERFORMING** the **LATERAL OPERATION** of **LITHOTOMY.** By **EDWARD STANLEY, Lecturer** on **Anatomy** and **Physiology** at **St. Bartholomew's Hospital.** Royal 4to. Plates, 15s.

MR. SWAN.

ILLUSTRATIONS of the **COMPARATIVE ANATOMY** of the **NERVOUS SYSTEM.** By **JOSEPH SWAN.** In 4to. Part I. 10s. 6d.; Parts II. & III. 7s. each.

By the same Author,

DEMONSTRATION of the **NERVES** of the **HUMAN BODY.** Imp. folio, with 50 Engravings, half-bd. russia, 14l.

DEMONSTRATION of the **NERVES** of the **HUMAN BODY.** Being the whole of the foregoing work, on 25 Steel Plates, by **FINDEN.** 4to. 1l. 11s. 6d.

TREATISE on **DISEASES** and **INJURIES** of the **NERVES.** 8vo. 14s.

MR. SYME.

A TREATISE on **DISEASES** of the **RECTUM.** By **JAMES SYME, F.R.S.E. Professor** of **Clinical Surgery** in the **University of Edinburgh, &c.** 8vo. 5s. boards.

DR. THOMAS.

MODERN PRACTICE of **PHYSIC**, exhibiting the **Character, Causes, Symptoms, Prognostics, Morbid Appearance, and improved Method** of treating the **Diseases** of all **Climates.** By **ROBERT THOMAS, M.D.** In 1 thick vol. 8vo. 9th edit. revised, 18s.

DR. A. T. THOMSON.

ELEMENTS of **MATERIA MEDICA** and **THERAPEUTICS**; including the recent **Discoveries** and **Analysis** of **Medicines.** By **A. TODD THOMSON, M.D. F.L.S. &c.** Professor of **Mat. Med. and Therapeutics, and of Medical Jurisprudence,** in the **London University College.** 1 vol. 8vo. 21s.

By the same Author,

LONDON DISPENSATORY; containing **Translations** of the **Pharmacopœias, &c. &c.—** A new edition, to correspond with the **New Pharmacopœia.** 8vo. 21s. cl. lettered.

CONSPECTUS of the **PHARMACOPŒIAS.** 10th edit. thoroughly revised and greatly improved, containing the alterations and additions of the last **London Pharmacopœia** and the **New French and American Remedies.** 5s. 6d. cloth lettered; or 6s. 6d. roan tuck, as a pocket-book, gilt edges.

ATLAS of **DELINEATIONS** of **CUTANEOUS ERUPTIONS**; illustrative of the **Descriptions** in **Dr. BATEMAN's Practical Synopsis** of **Cutaneous Diseases.** Royal 8vo. 29 col'd Plates, 3l. 3s.

SOME OBSERVATIONS on the **PREPARATION** and **MEDICINAL EMPLOYMENT** of **IODURET** and **HYDRIODATE** of **IRON.** 8vo. 2s. 6d. sewed.

DR. THORBURN.

ELEMENTS of BEDSIDE MEDICINE and GENERAL PATHOLOGY, &c. &c. By J. STEWART THORBURN, M.D. 8vo. 14s.

*** A Second Volume of the above is in the press.

MR. TRAVERS.

A FURTHER INQUIRY concerning CONSTITUTIONAL IRRITATION, and the PATHOLOGY of the NERVOUS SYSTEM. By BENJAMIN TRAVERS, F.R.S. Surgeon Extraordinary to Her Majesty, Senior Surgeon to St. Thomas's Hospital, &c. &c. 8vo. 14s.

By the same Author,

OBSERVATIONS on the PATHOLOGY of VENEREAL AFFECTIONS. 8vo. 3s.

INQUIRY into the PROCESS of NATURE in REPAIRING INJURIES of the INTESTINES. 8vo. with Plates, 15s.

AN INQUIRY concerning that DISTURBED STATE of the VITAL FUNCTIONS usually denominated CONSTITUTIONAL IRRITATION. 2d edit. revised, 8vo. 14s.

MR. WAITE.

THE GUMS; with late Discoveries on their Structure, Growth, Connexions, Diseases, and Sympathies. By GEORGE WAITE, Surgeon-Dentist, M.R.C.S. 1 vol. 12mo. 6s.

By the same Author,

THE SURGEON-DENTIST'S MANUAL. 12mo. 5s. 6d. bds.

MR. WARDROP.

ANEURISM, and its CURE by a NEW OPERATION.

By JAMES WARDROP, Surgeon to His late Majesty. Royal 8vo. 10s. 6d.

MR. WHITE.

COMPENDIUM of the VETERINARY ART; containing Rules for the Treatment of all the Disorders and Accidents to which the Horse is liable; &c. By J. WHITE, late Vet. Surgeon of the 1st, or Royal Dragoons. 15th edit. 8s.

By the same Author,

TREATISE on VETERINARY MEDICINE; Vol. II. containing the Materia Dietetica, the Materia Medica, and the Pharmacopœia. 12mo. 6th edit. considerably improved, 6s.

TREATISE on VETERINARY MEDICINE; Vol. III. containing Practical Observations on the Structure, Diseases, &c. of the Digestive Organs of the Horse, &c. 8th edit. 6s.

COMPENDIUM of CATTLE MEDICINE; or Practical Observations on the Disorders of Cattle and the other Domestic Animals, except the Horse. 12mo. 5th edit. 6s.

A COMPENDIOUS DICTIONARY of the VETERINARY ART. 12mo. 2d edition, enlarged, 7s. 6d.

London Medical Gazette :

A COMPLETE AND AUTHENTIC RECORD OF MEDICAL LITERATURE.

Published every Saturday Morning.

*** It is also issued (with the Magazines) in MONTHLY PARTS, with a full and arranged Table of Contents.

Vol. I. for the Session 1837-8 (being the first of a New Series) is just completed, containing 1060 Pages, and illustrated with upwards of Seventy Engravings on Wood, price £1. 2s. 6d. in boards.

CONTENTS OF PART IV.

	PAGE		PAGE
FEVER, REMITTENT (<i>concluded</i>)	- 961	HÆMORRHAGE FROM THE IN-	
FEVER, HECTIC - - -	- 962	TESTINES AND MELÆNA - -	99
FEVER, CONTINUED - - -	- 967	HÆMORRHAGE FROM THE	
FEVER, ARDENT - - -	- 972	URINARY ORGANS - - -	103
FEVER, INFLAMMATORY - -	- 973	HÆMORRHAGE FROM THE UTE-	
FEVER, BILIO-GASTRIC - -	- 983	RUS - - - - -	107
FEVER, MUCOUS OR PITUITOUS	988	Varieties of - - - - -	108
FEVER, SWEATING - - -	- 990	During the Puerperal States -	110
FEVER, SYNOCHOID - - -	- 993	Treatment of its different States -	113
FEVER, TYPHOID - - -	- 1001	HÆMORRHAGE INTO SEROUS	
FEVER, MILD TYPHOID, OR		CAVITIES - - - - -	119
NERVOUS - - - - -	- 1002	HÆMORRHAGE INTO THE AREO-	
FEVER, COMPLICATED TYPHOID	1003	LAR TISSUE, AND SUBSTANCE	
FEVER, TYPHOID, WITH PUTRO-		OF ORGANS - - - - -	121
ADYNAMIA - - - - -	- 1006	HÆMORRHOIDS — Description of	- 122
FEVER, TYPHOID, WITH EXAN-		Treatment of - - - - -	128
THEMATOUS ERUPTION - -	- 1009	HAIR — Effects of Removing the, &c.	- 134
FEVERS, TYPHOID — Structural Le-		Morbid States of - - - - -	135
sions in, &c. - - - - -	- 1013	HAIR — LOSS OF - - - - -	137
Treatment of - - - - -	- 1017	HAIR, TRICHOMATOUS — PLICA	- 139
Various Modes of Treatment of, &c.	1028	HEADACH — Varieties of - - -	142
Bibliography and References -	- 1038	Treatment of - - - - -	149
FIBROUS TISSUE — Diseases of	- 1040	HEARING — Impaired or Lost -	156
FLATULENCY - - - - -	- 1043	Different Forms of Deafness -	157
FÆTUS — Diseases of the - -	- 1047	Treatment of Deafness - - -	162
FUNGOID DISEASES - - -	- 1048	HEART AND PERICARDIUM — Dis-	
FURUNCULAR ERUPTIONS - -	- 1053	eases of the - - - - -	162
		HEART — Of the Actions and Sounds of	- 165
		HEART — General View of its Diseases	- 169
		HERAT — Of Functional Disorders of the	175
		HEART — Of Neuralgic Affections of the	178
		HEART — Inflammation of the Internal	
		Surfaces of the — ENDOCARDITIS	- 180
		Lesions consequent upon Internal Car-	
		ditis - - - - -	183
		HEART — Inflammation of the Pericar-	
		dium — PERICARDITIS - - -	185
		Lesions, &c., consequent upon Peri-	
		carditis - - - - -	187
		HEART — Inflammation of the Substance	
		of the — CARDITIS - - - -	190
		Lesions consequent upon True Carditis	192
		HEART — TREATMENT OF ENDO-	
		CARDITIS, PERICARDITIS, AND	
		CARDITIS - - - - -	194
		HEART — INFLAMMATIONS OF, IN	
		CHILDREN - - - - -	200
		HEART AND PERICARDIUM —	
		STRUCTURAL LESIONS OF THE	202
		HEART — HYPERTROPHY OF -	203
		HEART — Influence of Hypertrophy in	
		the Production of Hæmorrhages -	205
		Treatment of Hypertrophy of the	208

VOL. II.

GALL-BLADDER AND DUCTS	- 1		
Torpor of, &c. - - - -	- 2		
Inflammation of - - - -	- 5		
GANGRENE — Pathological Relations			
and Forms of - - - - -	- 8		
Symptoms, &c. of - - - -	- 18		
Treatment of its Forms - -	- 21		
GASTRO-ENTERIC DISEASE - -	- 26		
GLANDERS - - - - -	- 30		
GOUT — Forms and History of -	- 33		
Pathology of, &c. - - - -	- 43		
Treatment of its various Forms -	- 45		
HÆMORRHAGE — Pathology of -	- 61		
Treatment of - - - - -	- 67		
HÆMORRHAGE FROM THE SKIN	72		
HÆMORRHAGE FROM THE NOSE	73		
HÆMORRHAGE FROM THE			
MOUTH AND THROAT - - -	- 77		
HÆMORRHAGE FROM THE RE-			
SPIRATORY ORGANS - - -	- 79		
HÆMORRHAGE FROM THE STO-			
MACH - - - - -	- 90		

R176



too exciting. The effect of whatever is given should be carefully watched; and the articles of diet selected accordingly. When convalescence is established, the preparations of iron, and due attention to the states of the bowels, are most necessary.

BIBLIOG. AND REFER. — *T. Bates*, An Enchiridion of Fevers incident to Seamen in the Mediterranean, &c. 12mo. Lond. 1709. — *J. Grainger*, Hist. Febris Anomalæ Batavæ, &c. 8vo. Edin. 1753. — *P. Desperrières*, Des Fièvres de l'Isle de St. Dominique, 12mo. Par. 1673. — *Tissot*, De Febribus Biliosis. Lausanne, 8vo. 1768. — *Cleghorn*, On the Epid. Dis. of Minorca, 3d edit. *passim*. — *D. Lysons*, Pract. Essays on Intermitting Fevers, 8vo. Bath, 1772. — *J. Sims*, Observat. on Epidemical Disorders, 8vo. Lond. 1773, p. 163. (On Infantile Remitt.) — *Elsacker*, De Febr. Remitt. Contin. Biliosis, Putridis, &c. 8vo. Antw. 1774. — *S. Musgrave*, On the Nature and Cure of the Worm Fever, 8vo. Lond. 1776. — *J. Lind*, Treat. on the Putrid Fever of Bengal in 1762, 12mo. Edin. 1776. — *Rollo*, Observat. on the Diseases of the Army of St. Lucia, 8vo. Lond. 1781. — *B. Rush*, Medical Inquir. and Observations, p. 104. — *D. Ryan*, On the Remitt. Fevers of the West Indies, in *Simmons's* Lond. Med. Journ. vol. iii. p. 63. — *W. Butter*, Treatise on the Infantile Remittent Fever, 8vo. Lond. 1782. — *J. Clark*, Observ. on the Dis. in long Voyages to Hot Countries, 8vo. Lond. 1792. vol. i. p. 157. 2d edit. — *B. Moseley*, Treatise on Tropical Diseases, &c. 8vo. Lond. 1789, p. 171. (Had never seen the true pestilential yellow fever. The disease described by him under the appellation of "Endemial Causus, or Yellow Fever," is the seasoning or Climate Fever, to be noticed hereafter.) — *R. Jackson*, Treatise on the Fevers of Jamaica, 8vo. Lond. 1791. — *W. Boag*, On the Fevers and Dysentery of Hot Climates, in Med. Facts and Observat. vol. iv. p. 1. — *C. Strack*, Observat. Medicin. de diversâ Febris Continuæ remittentis Causâ, et quâ diversâ eadem Medendū sit, ratione, 8vo. Mogunt. 1789. — *Beaumes*, De l'Usage de Quinquina dans les Fièvres Remittentes, 8vo. Paris, 1790. — *Pereboom*, De Ascaridibus et Febre Remittente. Francf. 1791. — *A. Comparetti*, Riscont. Medici delle Febbri larvate Period. perniciose, t. ii. Pad. 8vo. 1795. — *F. Balfour*, A Treat. on Putrid Intestinal Remittent Fever, 8vo. Lond. 1796. — *W. Currie*, Observat. on Remitt. or Bilious Fevers, 8vo. Philad. 1798. — *R. Hamilton*, Observat. on the Marsh Remitt. Fever, &c. 8vo. Lond. 1801. — *T. Clark*, Observat. on the Fevers and other Dis. of the East and West Indies, 8vo. Edin. 1801. — *F. Wendt*, De Febribus Remittentibus Semestrii Hiberni, Anni 1795, 1796. Erling. 1796. — *Hunter*, On the Diseases of Jamaica, 3d edit. p. 118. — *V. Ambrogi*, De Cognoscend. et Curand. Febribus Pseudo-perniciosi, 4to. Rom. 1805. — *L. L. Rossi*, Delle Febbri Perniciose, 8vo. Milano, 1807. — *Pinckard*, Notes on the West Indies, &c. vol. iii. let. 12. p. 134. — *T. Sutton*, Practical Account of a Remittent Fever among the Troops, &c. 8vo. Cant. 1806. — *R. Robertson*, Observat. on Fevers from Marsh Miasmata, &c. 4 vols. Lond. 1807. — *J. B. Davis*, A View of the Fever of Walcheren, &c. 8vo. Lond. 1810. — *G. P. Dawson*, Observat. on the Walcheren Diseases, &c. Ipswich, 1810. — *T. Wright*, Hist. of the Walcheren Remitt. 8vo. Lond. 1811. — *J. M. Coley*, Treatise on the Remittent Fever of Infants, 8vo. Stourb. 1813. — *C. Powel*, Treatise on the Endemic or Yellow Fever of Tropical Climates, 8vo. Lond. 1814. — *C. R. Pemberton*, On Diseases of the Abdominal Viscera, 8vo. Lond. 4th edit. p. 163. — *Gibson*, Edin. Med. and Surg. Journ. vol. xi. — *Fournier et Vaidy*, Dict. des Sciences Méd. t. xv. p. 411. — *Denmark*, Trans. of Med. and Chirurg. Society, vol. vi. p. 296. — *J. B. T. Beaumes*, Traité des Fièvres Remittentes, tom. iii. 8vo. Montp. 1821. — *W. Burnett*, Practical Account of the Bilious Remittent Fever of the Mediterranean, &c. 8vo. 2d edit. Lond. 1816. — *Boyd*, De Febre Minorcæ, 8vo. Ed. 1817. — *McCabe*, in Edin. Med. and Surg. Journ. Oct. 1819. — *N. Dickinson*, Observat. on the Inflammatory Endemic incidental to Strangers in the West Indies from Temp. Climates, &c. 8vo. Lond. 1829. — *Goodison*, in Dub. Hosp. Reports, vol. i. p. 191. (On the Remittent of Corfu.) — *C. Chisholm*, Manual of the Climate and Diseases of Tropical Countries, 8vo. Lond. 1822, p. 32. — *J. Johnson*, On the Influence of Hot Climates, &c. *passim*. — *J. B. Monfalcon*, Histoire Médicale des Marais, ou Traité des Fièvres Intermit. et Remittentes, 8vo. Paris, 1826. — *J. Bouillaud*, Traité Clinique des Fièvres Essentielles, &c. p. 518. — *J. Annesley*, Sketches of the Diseases of India, 8vo. 1826, *passim*. — *J. Annesley and Author*, Researches on the Nature and Treatment of the Diseases of India and of Warm Climates, &c. 2 vols. imp. 4to. vol. ii. p. 409. et seq. — *M. Good*, Study of Medicine, edit. by S. Cooper, vol. ii. p. 160. (Remittents, the continued inflammatory of warm climates, or seasoning fever, and epidemic or true yellow fever, are all mixed up together in a confused manner.) — *J. Macculloch*, Essay on the Remittent and Intermitting

Diseases, or Marsh Fevers and Neuralgia, &c. 2 vols. 8vo. Lond. 1828; also, On Malaria, an Essay, 8vo. Lond. 1827. — *P. F. Napple*, Essai sur les Fièvres Remitt. et Intermit. &c. 8vo. Paris, 1828. — *E. G. Boisseau*, Pyrétologie Physiologique, &c. p. 648. 3d edit. — *R. Lewins*, On Infantile Remittent Fever, in Edin. Med. and Surg. Journ. vol. xxxviii. p. 115. — *J. Hennen*, Medical Topography of the Mediterranean, &c. 8vo. Lond. 1830, *passim*. — *W. P. Dewees*, Practice of Physic, &c. vol. i. p. 109. 8vo. Philad. 1830. — *J. Boyle*, An Account of the Western Coast of Africa, with the Causes, Sympt. and Treatment of the Fevers of Western Africa, &c. 8vo. Lond. 1831, p. 71—201. — *W. Stevens*, Observat. on the Healthy and Diseased Properties of the Blood, 8vo. Lond. 1831, p. 163. et seq. — *Brown*, Cyclop. of Pract. Med. vol. ii. — *J. Joy*, in Ibid. vol. ii. (Infantile Remitt.) — *W. Twining*, Clinical Observat. on the Diseases of Bengal, &c. 8vo Calcutta, 1832. (Approves of a moderate bloodletting in Europeans in India, upon the approach of the cold stage of agues.) — *W. E. E. Conwell*, On the Functional and Organic Changes of the Liver, and the Agency of Hepatic Derangement in producing other Disorders, &c. 8vo. Lond. 1835.

XV. HECTIC FEVER. SYN. — *Ἑκτική* (from *ἐκτικὸς*, constitutional, and this from *ἔξις*, habit of body); *Febris hectica*, *Febris marasmodes*, *Febris tabida*, *Febris lenta*, *Febris amatoria*, *F. ampharina Hectica*, *Atrophia*, *Tabes*, Auct. Var.; *Epanetus Hectica*, Young and Good; *Das schleichendes Fieber*, *Hektisches Fieber*, Germ.; *Fièvre Hectique*, Fr.; *Etica Febbre*, Ital.; *Hectic Remittent*, Decline, &c.

289. DEFIN. — Chronic, remittent, or sub-continued fever, with loss of strength and flesh, generally depending upon some evident or concealed source of irritation.

290. This disease is characterised by its slow and insidious approach; its prolonged duration; by emaciation and frequency of pulse; by febrile exacerbations at noon and in the evening, or after a meal, with heat in the palms of the hands and soles of the feet; and lastly, by colliquative sweats and diarrhoea. — The question, as to whether this fever is ever idiopathic, or always proceeds from some evident or concealed local irritation, has been much discussed. The greater number of systematic writers contend that it is occasionally a primary affection, or independent of local lesion. Amongst these are SAUVAGES, SAGAR, LINNÆUS, STOLL, PARR, PINEL, WILLAN, GOOD, &c.; whilst VOGEL, CULLEN, HERBERDEN, and others, entertain a different opinion. Believing that it is, in very rare cases, not assignable to any local lesion or irritation, but is owing rather to debility or exhaustion in irritable constitutions, — that, although not a primary affection, it cannot *always* be attributed to any local lesion, the nature and seat of which can be recognised, — I have introduced it at this place. But, whilst I admit this, I must confess that the arguments adduced by those who consider that hectic is sometimes independent of local irritation, are by no means conclusive. Dr. PERCIVAL, in his remarks, published by Dr. GOOD, states that he has seen idiopathic hectic last three months "without any pulmonary affection, and then to break out in the lungs." But the lungs may be diseased for a long time without their functions being manifestly disordered, otherwise than in causing the hectic fever, which may be thus erroneously considered idiopathic. There cannot be the least doubt that various changes may take place in parts possessed of a very low grade of sensibility and imperfect powers of reparation, as the parenchyma of several viscera, particularly the lungs, liver, kidneys, mesenteric glands, bones, &c., unattended by any pheno-

menon which will enable us to recognise their precise seat and nature, and yet give rise to hectic fever.

291. Mr. J. HUNTER contended for its idiopathic existence, by supposing that the constitution may fall into the same mode of action, without any local cause whatever, as proceeds from such cause. This is, however, no argument. He further observes, that nothing is more common than for hectic to exist in patients in whom no local disease whatever can be traced; and that, in such cases, either random suspicions are to be thrown upon the lungs, liver, kidneys, heart, or mesenteric glands, as casual symptoms may suggest, or its idiopathic nature must be inferred. Admitting that there is some truth in this, it should still be contended, that improved means of diagnosis, and a more intimate acquaintance with the origin and relations of morbid actions, have greatly abridged the number of instances in which no local lesion can be detected; and that, instead of this circumstance being common, it is remarkably rare. It is somewhat singular, that the same author, — M. BROUSSAIS, — who has written so ably against the existence of fever as an essential or idiopathic disease, should have produced, in 1803, a work on hectic fever, in which its idiopathic nature is strenuously contended for, and its various forms very minutely described — the least idiopathic of all fevers having been considered by him chiefly as such; — M. BROUSSAIS had, however, not then changed his opinions as to the nature of fever.

292. i. DESCRIPTION. — The early symptoms of hectic are — emaciation with a pale, and often fair, skin; increased frequency of pulse, especially at noon and evening, with some degree of hardness or sharpness; rapid or short respiration on any exertion; and increased heat of skin. — The exacerbations are at first very slight; but they soon become more evident, particularly in the evening; are preceded by a slight or marked chill; are attended by increased heat, which is most evident in the hands and face, the skin being at first dry; and terminate in a free, profuse perspiration, especially the evening paroxysm, which usually subsides in this manner early in the morning. The bowels are costive, but afterwards readily acted upon; ultimately they are relaxed, and colliquative diarrhoea supervenes. The urine is various, but most frequently pale and without deposit; more rarely high-coloured, and with a lateritious sediment. As the disease advances, the delicate circumscribed bloom on the cheek, which was at first only occasional, is more constant and general, especially during the exacerbations; the throat and fauces are red, dry, and irritable; the tongue is often clean, red, smooth, without papillæ, and glazed, and ultimately, with the lips and fauces, is covered by aphthous exudations; the eyes are sunk in their orbits, from the absorption of adipose matter, but are brilliant and expressive, their whites pearly and clear; the whole frame is emaciated, and the temples excavated; the hair falls out; the ankles and sometimes the legs are œdematous; sleep is unrefreshing, feverish and disturbed; and debility with a sense of lassitude is constant, but the patient's spirits are unbroken or even sanguine. At last the diarrhoea and colliquative sweats become daily more abundant; the respiration short and precipitate; and the debility so

great, that the patient often expires when attempting to speak, or on assuming a sitting posture, &c. During the course of the disease, the sensorial functions preserve their integrity; but sometimes, towards the close, slight delirium occurs. In those cases especially which depend upon organic change in the respiratory organs, there are more or less dyspnoea, cough, and expectoration; the nails become incurvated; the last joints with the extremities of the fingers fusiform, and the expectation of recovery gains strength with the progress of disease. (See TUBERCULAR CONSUMPTION.)

293. MM. BROUSSAIS, FOURNIER, VAIDY, BOISSEAU, COUTANCEAU, and some other writers, have divided hectic into *three stages*: the *first* continuing as long as the appetite and strength are not materially impaired, and the remissions are distinct; the *second* consisting of a small, quick, and frequent pulse, accelerated during the exacerbations, with debilitating perspirations, burning heat of the palms of the hands and soles of the feet, and rapid emaciation; the *third* supervening with the colliquative diarrhoea, œdema of the lower extremities, extreme emaciation and prostration of strength.

294. ii. The CAUSES of hectic fever are remarkably diversified. — It most commonly proceeds from suppuration, ulceration, chronic inflammation, excessive action, and irritation of a secreting organ or surface; from caries, necrosis, or structural change of osseous parts; and from slow inflammatory action of any part whatever of the frame. It also attends upon various adventitious and malignant productions. But in all these, it is merely a symptom of the extent to which the constitution is influenced by the local change. M. BROUSSAIS has distinguished several varieties of hectic according to the nature and seat of its principal causes; as, the *Gastric*, the *Pectoral*, the *Genital*, *Hæmorrhagic*, *Cutaneous*, *Moral*, &c. HILDENBRAND enumerates the following: the *Inflammatory*, *Putrid*, *Nervous*, *Gastric*, *Atrabiliarious*, *Pituitous*, *Verminous*, *Enteromesenteric*, and *Suppurative*, to which may be added the *Puerperal*. As each of these varieties attaches to itself more or less importance, and as the division adopted by M. BROUSSAIS has been very closely followed by numerous recent writers, I shall offer a few remarks in illustration.

295. a. *Gastric Hectic* is distinguished by anorexia, thirst, dryness of the mouth, prolonged and difficult digestion, and more or less of the usual concomitants of indigestion, especially eructations, flatulence, acidity, cardialgia, &c. Sometimes the appetite is unimpaired, or is even increased, but digestion is faulty. The tongue is loaded, the mouth clammy, and the taste disordered. There are often uneasiness at the stomach, tenderness of the epigastrium, and frontal or sub-orbital cephalalgia. The complaint is exasperated by heating food, and the abuse of stimulants, which occasion a sense of heat in the stomach, or pain and cardialgia, with acid or acrid eructations. Ultimately the patient becomes pale; the breath foetid; the bowels costive, irregular, or even irritable; and the symptoms of hectic fully developed. In *children*, picking of the nose, mucous diarrhoea, and occasionally the expulsion of worms, are also observed; and the disorder is almost identified with, or is merely a

modification of, the remittent of children (§ 270.). This form of hectic is very probably connected, as BROUSSAIS, BOISSEAU, and others believe, with chronic irritation of the digestive mucous surface; but debility, more especially of the organic nervous system, is the primary and most important constituent of the disorder. The hectic sometimes observed to follow lactation, particularly when prolonged, is often of this kind. M. BROUSSAIS has distinguished the connection of hectic with cutaneous eruptions, by the denomination of *Cutaneous Hectic*. But the constitutional disturbance is less the effect of the affection of the skin than of the disorder of the digestive organs, with which the latter is very generally associated as a symptom.

296. *b. Pectoral Hectic* consists of the constitutional disorder consequent—1st, upon inflammation or ulceration of the larynx, and irritation of the epiglottis;—2dly, upon the various forms of bronchitis;—3dly, on the several lesions of the lungs;—and, 4thly, upon chronic alterations of the pleura. It should, however, be recollected, that any of the various kinds of pectoral hectic may be associated with gastric disorder; indeed, the advanced stages of the former are always attended by more or less of the latter. Hectic arising from these lesions is fully treated of under the respective heads.

297. *c. Genital Hectic* consists of debility, associated with febrile exacerbations, caused by excessive sexual indulgences, or by masturbation; by irritation and mucous discharges from the sexual passages; and, occasionally, by irritation of the urinary organs.—These phenomena not merely occasion, but also accompany and perpetuate, the hectic symptoms, until other viscera are drawn within the vortex of morbid action; the digestive organs, especially the mucous surface, or the lungs, or even both, becoming also diseased, and ultimately evincing the most prominent affection. The ill-regulated or excessive indulgences and dissipations of youth are often productive of irritation of the sexual and urinary organs, attended by more or less discharge; by debility, febrile exacerbations, and indigestion. If the indulgences which induce this disorder are continued, organic nervous power is prostrated further still; digestion and assimilation are rendered more imperfect; circulation through the lungs more irregular; and ultimately tubercular formations are developed in this organ, especially if the diathesis or other causes conspire with this in forming them.—It is an important fact, and one which is too generally overlooked, that hectic fever, induced either by irritation of the sexual organs, or by disease of the lungs, is attended by a remarkable propensity to masturbation, which counteracts but too generally every means of cure.

298. *d. Puerperal Hectic* is that form of slow fever which sometimes affects delicate females during *lactation*, and which, if the cause be continued, may superinduce pulmonary disease. It also sometimes follows protracted or excessive lactation, and passes either into pectoral hectic, or into a chronic state of debility, with especial disorder of some one of the abdominal viscera.

299. *e. Hæmorrhagic Hectic*, or the slow fever consequent upon loss of blood, is to be attributed rather to the pathological state giving

rise to the hæmorrhage, than to the debility caused by the loss of blood. Hectic, even in its slighter forms, seldom follows large bleedings from wounds; whilst it is a very common sequent of hæmorrhage from the pulmonary and digestive mucous surfaces; for there is generally antecedent disease, either of the mucous surfaces themselves, or of parts intimately connected with them, that sooner or later would very generally be productive of hectic fever, if no hæmorrhage had ever taken place. When hectic follows the suppression or disappearance of hæmorrhages, either occasional, habitual, or periodic, chronic inflammation or irritation of some important viscus, more especially of the lungs, the liver, the uterus, &c., should be suspected.

300. *f.* Some authors have distinguished a form of hectic from *mental or moral causes*.—There can be no doubt, when the mind becomes possessed by a predominating passion or desire, or constantly ruminates on some depressing sentiment, or continually regrets the loss of endearing objects, that the powers of life will gradually languish, and that, in delicate constitutions especially, many of the symptoms of hectic or slow fever will be produced; and, although the mental affection may not induce more than the earlier stage or slighter grade of the disease, in sound constitutions, it will frequently occasion, especially in the weak, and in those endowed with a morbid diathesis, structural change in the lungs and other susceptible organs, owing to the continued depression of organic nervous power which it causes, and to the changes resulting therefrom. Every observer must have remarked the series of changes following the loss of loved objects, disappointed or abused affections, unmerited neglect, &c.; and recognised the influence of the mental impression upon the functions of digestion, assimilation, circulation, and respiration successively, until a predisposed organ—most frequently the lungs, the heart, or the liver—indicated a predominance of disorder and fatal tendency. In these cases, the slighter forms of hectic, the pallor, emaciation, febrile exacerbations, sleeplessness, and debility, advance slowly, and become imperceptibly associated with shortness of breath, dyspnoea, short cough, hectic flushes, and morning perspirations; the lungs very frequently evincing most serious disease. In all instances of this kind, it is important to ascertain the changes more immediately consequent upon the exciting cause. In every case which I have seen sufficiently early, the vegetative or organic functions were in a debilitated or blighted state; the appetite was diminished; digestion impaired; the pulse languid, slow, and weak; the circulation through the lungs imperfect and impeded, as indicated by frequent sighing, and oppression in the thorax; and the impulse of the heart very deficient, or at times either irregular or excessive, as if this organ were labouring to overcome the congestion consequent upon the impeded circulation through the lungs. The tubercles which generally form in the course of these affections cannot be ascribed to inflammatory action, as they originate when the organic nervous power of, and circulation through, the lungs, are most impaired; but are rather a result of these latter pathological states.

301. *g.* As to the other varieties mentioned by HILDENBRAND, a few remarks may be necessary.

— *α. Inflammatory Hectic* is merely that form of symptomatic fever which usually attends chronic inflammation of an internal viscus, or of a deep-seated part. — *β. Putrid hectic* is the fever sometimes attending scorbutic affections, or gangrenous and spreading ulceration, &c.; or arising from unwholesome and innutritious food. — *γ. Nervous Hectic* is the constitutional disturbance observed in persons labouring under mental afflictions, &c. (§ 300.), or chronic disorder of the nervous system, and in chlorotic and hysterical females. — *δ. Atrabilious Hectic* presents itself in persons long subject to disorder of the liver and other digestive organs — whose portal circulation has become congested or obstructed, their biliary and intestinal secretions morbid, and their digestive canal torpid or overloaded. Such persons are morally and physically depressed; are melancholic and hypochondriacal, sallow, squalid, and thin; are often affected with shortness of breath, colicky pains, disordered bowels, tenesmus, and hæmorrhoids; the stools are dark, foetid, and scybalous, and the abdomen frequently hard or tense. — *ε. Pituitous Hectic* is merely a modification of the gastric (§ 295.), attended by pituitous coluvies in the prima via, owing to imperfect power of the organic nervous system. It is common in children, and is characterised by pallor, leucophlegmatic indolence, and torpor; swollen lymphatic glands, increased secretion of mucus; tumid abdomen; fluor albus; the collection of viscid mucous on the tongue and teeth; coryza, mucous diarrhœa, and obscurely remitting and slight fever. — *ζ. Verminous Hectic* is a modification of the foregoing, or the association with it of worms in the intestinal canal. It is occasionally observed in delicate and relaxed, or rickety, or scrofulous, children; and in those who live in low, damp, close, and unhealthy localities and apartments, and who are subject to chronic bronchitis or winter catarrhs. — *η. The Entero-mesenteric* is a modification of the *pituitous* and *gastric*, particularly when occurring in children; or is rather the association of enlargement of the mesenteric glands with the affection of the digestive mucous surface, chiefly constituting these varieties. It is hence closely allied to the affection already described under the head of *Infantile Remittent* (§ 278.). — (See also art. *MESENTERIC DECLINE*.)

302. *h.* The varieties of hectic which arise, from the formation of matter in internal viscera, from tuberculous ulceration, from carious bones, &c., from the irritation of foreign substances, and from chronic inflammation affecting parts possessing a deficient power of reparation, possess general features of resemblance, but vary in the more minute details, and differ not materially from the general description given above (§ 292.).

303. *iii.* *PROGNOSIS.* — The *duration* of hectic varies from a very few weeks to a number of years; but, however long, the tendency of the disease is fatal, unless circumstances occur or medical means be used to arrest its course — unless the causes on which it depends are removed. — The *danger* is owing entirely to these causes, and is great according to their nature. — In cases of caries, or of other local diseases which admit of removal, the fever disappears soon after the separation of the morbid from the healthy parts. When the disease depends upon the continued or repeated irritation of a secreting surface or gland,

as in its *sexual* and *puerperal* varieties (§ 297, 298.), and in the chronic forms of bronchitis and diarrhœa, it generally disappears with the cause which produced it, unless serious disease of some important viscus, as of the lungs, has been superinduced in its course. But when chronic inflammation continues to destroy, or to alter the structure of, some vital organ or deep-seated tissue, or when the substance of an internal viscus is in a state of suppuration, or when hectic proceeds from tuberculous formations, recovery seldom takes place. Yet, in some of these cases, the powers of life continue long to resist the progress of disorganisation; and occasionally at last are successful, not only in limiting it, but also in removing the chief of whatever changes had taken place. This is demonstrated in the adhesions of serous surfaces, in the absorption of purulent collections from the substance of internal viscera, or in their discharge, and in the subsequent cicatrisation of the parts affected. Both the liver and lungs furnish proofs, although in rare cases, of such occurrences. Even a lobe of one of the lungs may be entirely destroyed by suppuration, and the patient recover. Where the cause is obscure, and we doubt whether the disorder is idiopathic or the consequence of some lesion that eludes detection, the patient being young, and vital power not far reduced, hopes should be entertained. But when strength is far reduced, emaciation extreme, and colliquative diarrhœa or perspiration is present, there is little or no chance of recovery.

304. *iv.* *PATHOLOGY.* — *A.* The *Lesions, post mortem*, consist — 1st, of those which *caused* the fever (§ 294.); — 2d, of alterations of the mucous surface of the digestive canal, upon which the diarrhœa present in the last stage mainly depended; — 3d, of disease of the lymphatic and mesenteric glands; — and, 4th, of redness and inflammatory discolouration of the lining membrane of the heart and large vessels. — The various lesions from which this fever may proceed, require no further notice than has been taken of them in other articles; but those which are evidently consequent upon its early stages, which aggravate it in its course, causing the more severe symptoms characterising its latter periods, are deserving of attention. — The changes in the digestive mucous surface consist chiefly of tubercular depositions, and of ulceration seated more especially in the lower part of the ileum and in the cæcum, with softening, and frequently with superficial redness, of the mucous membrane. The ulcers, however, are often unattended by redness, thickening, or unequivocally inflammatory appearances; and are entirely similar to those described in the article *DIGESTIVE CANAL* (§ 36. *et seq.*). The changes in the absorbent glands are the same as those described in the article *LYMPHATICS*.

305. The lesions of the circulating system have been overlooked, until notice was directed to them by BOUILLAUD, who has given the details of a number of cases of hectic, in which the internal membrane of the heart, and large vessels, both arterial and venous, presented more or less of inflammatory redness; the substance of the heart itself being often soft and flaccid, and atheromatous depositions being sometimes found in the internal membrane of the arteries. — Several years ago, I observed the internal lining of the pulmonary vein, and of its principal branches, of a

dark red and reddish brown colour, in a patient who died with tuberculous excavations in the lungs; and I have seen similar appearances subsequently in two or three cases of this disease. — But whether these appearances are the result of inflammatory irritation induced in the internal surface of the circulating system, or depend upon the action of the blood upon this surface after death, has not been satisfactorily ascertained.

306. *B. Nature, &c. of Hectic.* — Pathologists have supposed that the disease depends upon the gradual absorption of purulent, sanious, or other morbid matters into the circulation; and others have believed that it arises entirely from the local irritation — no such absorption occurring. — It is necessary to keep in recollection a few facts, which will serve to elucidate the matter. — (a) Large excavations, &c. often take place in the lungs without much cough, and with little or no expectoration, but with severe and rapid hectic: absorption, in these at least, must exist to a certain extent. — (b) In such cases, the diarrhoea and night sweats are frequently very great. — (c) In caries, the hectic is also severe in proportion to the evidence of absorption. — (d) The glands in the vicinity of carious, suppurated, ulcerated, or tuberculated parts, often become affected. — (e) Irritation, excessive pain, foreign substances, &c. may long exist in deep-seated or internal parts, without inducing hectic, or causing more than the symptoms of its slighter forms or early stages, as long as these causes do not give rise to morbid secretions in the substance of the affected tissue; but, as soon as matter is collected, or a fluid is formed from the destruction of the surrounding organisation, the usual signs of confirmed hectic appear. — (f) Purulent matters have evidently formed in the liver, and occasioned hectic: the patient has recovered; and, having afterwards died of some other disease, has presented proofs, in the changes observed in this organ, that an abscess had existed in it. — (g) Lesions of the blood-vessels are not infrequent in the advanced stages of the worst forms of hectic, or those caused by tubercles and suppuration. — These facts induce me to infer — 1st, that absorption actually takes place; — 2d, that it proceeds slowly — the depurating viscera, especially the kidneys, bowels, and skin, generally removing the morbid matters, or preventing their accumulation in the blood to the extent of causing very manifest or rapid changes in it; — and, 3d, that the absorbed matters ultimately affect the blood, and not improbably the vessels also in which they circulate. I believe that the diarrhoea characterising the last stage of hectic, is caused as much by the disordered state of the blood affecting the mucous follicles and membrane, as by inflammatory irritation; and that, when this latter condition exists, it arises chiefly from the blood, and the morbid secretion poured out by these tissues. The alteration in the blood may readily be supposed to discolour, or otherwise affect, the internal surface of the vascular system, or even to inflame or disorganise it, in those vessels which proceed from the part which is the seat of caries, suppuration, or of tubercular ulceration. — As to the softening and flaccidity of the heart, upon which M. BOVILLAUD places some stress, I have seen nothing beyond what is presented by other muscular parts in these cases, the heart having partici-

pated in the emaciation or deficient nutrition of the rest of the body. — From these considerations I therefore conclude, that hectic fever is most frequently the result — 1st, of local irritation, of a slow inflammatory kind, either latent or manifest, and generally consequent upon, and associated with, debility; — and, 2dly, of the passage of morbid matters into the circulation, where they occasion most of the severe phenomena uniformly and contingently present in the last stage.

307. *v. TREATMENT.* — The means of cure must have immediate reference to the cause or pathological state on which the hectic depends. — During the first and second stages, they may be often employed with success. But when the third stage has supervened, we can expect nothing from them beyond alleviating the more distressing symptoms. — a. When the disease proceeds from the association of *disease of the digestive mucous surface*, with debility (§ 295.), the treatment should consist chiefly of strict attention to diet — the farinaceous and easily digested articles of food being selected; of attention to air, gentle exercise, and to the state of the excretions; of gentle tonics conjoined with small doses of ipecacuanha and anodynes; of the infusion of cinchona with the solution of acetate of ammonia, or with small quantities of the nitrate of potash and sweet spirits of nitre, of bitters associated with laxatives, or of emollients with mild narcotics, according to the circumstances of the case. The bitter infusions may likewise be given with prussic acid, or with the extract of hop. When we suspect the existence of alterations of structure, they may be conjoined with the liquor potassæ, or BRANDISH'S alkaline solution and conium. If the preparations of iodine be tried, very small doses only should be exhibited. A weak solution of the hydriodate of potash, or of the ioduret of iron, is most appropriate in such cases, either alone or with a narcotic, as hyoscyamus, conium, or extractum humuli. (See STOMACH — *Diseases of.*)

308. *b. The treatment of the pectoral and laryngeal forms* of hectic is so fully stated in the articles on the individual chronic diseases affecting the respiratory organs and passages, that nothing need be advanced on the subject at this place. It is only in the early stages of these forms of hectic especially, that material advantage can be hoped from medicine. The means just enumerated will often be found of service; but they require to be modified according to the peculiar features of the case. Gentle astringents and tonics, mineral acids, &c. are sometimes also useful. Of these, the infusion of roses with sulphate of zinc, sulphuric acid, and narcotics, is most appropriate.

309. *c. The sexual and puerperal forms* of hectic generally soon disappear upon the removal of their respective causes, if serious changes in remote organs have not been superinduced by a continuance of the irritating and exhausting discharges, in which the hectic originates — by the practices inducing and perpetuating the disease. In these forms, the recovery depends much upon the patient himself. Early rising; mental and bodily occupations; low regimen; the avoidance of stimulating beverages, heating foods, and of warm condiments; travelling or voyaging; change of air; and a prudent regulation of the imagin-

ation; are among the most effectual means of cure. Seltzer water, soda water; the mineral waters of Pyrmont, Carlsbad, of Gielenau, of Ems, of Vichy, of Bath, of Tunbridge, &c., are severally useful, if appropriately prescribed. — When the disease is occasioned by suckling, the cure is generally speedy, if the cause is relinquished before an important organ becomes affected; and if a restorative regimen, with change of air, be adopted. In such cases, the *mistura ferri composita*, and *chalybeate waters*, or the mineral waters just mentioned, are very serviceable.

310. *d.* The treatment of the other varieties of hectic is not materially different from that now stated. — When the disease follows *hæmorrhages*, the means of cure should be directed especially to the pathological state of which the hæmorrhage is the result. (See that article.) — If it be connected with *cutaneous eruptions*, the state of the digestive organs, and of the frame generally, ought to claim an especial notice; and if it originate in *mental emotions*, such measures as are the best calculated to divert the mind from contemplating the sources and relations of its misery should be prescribed. — The *atrabilious*, *pituitous*, and *verminous* varieties require the combination of tonics with warm purgatives (F. 557—563. 572—576.), *chalybeate mineral waters*, and vegetable and mineral deobstruents.

311. *e.* When the *irritation and absorption of morbid matter* are the causes of hectic, their sources should be removed; especially when they consist of carious bones, diseased joints, puriform collections, &c. But when this indication cannot be accomplished, or when the preservation of a limb requires that every means should be tried, the treatment ought to be directed with the view — 1st, of diminishing irritation; and, 2dly, of counteracting or resisting the contaminating influence of the morbid secretion on the circulation. — The first of these is to be fulfilled by a judicious use of opium, morphine, hop, henbane, hemlock, &c.; — the second, by medicines which support vital energy, and thereby resist the extension of disease, or promote the powers of reparation; as digestible nourishment, dry and pure air, gentle tonics, antiseptics, absorbents, and astringents. These may be variously conjoined, according to the peculiarities of the case — anodynes and narcotics with tonics, and tonics with antiseptics and absorbents. Thus, the infusion of cinchona may be prescribed with muriatic acid and the muriate of morphine; the infusion of cascarilla with the solution of the acetate of ammonia and the acetate of morphine; the tonic infusions or decoctions with the alkaline sub-carbonates, or with the solution of potash, or with the chlorates, and the extract of hop or of hemlock, &c. Camphor may likewise be conjoined with narcotics, in cretaceous and absorbent mixtures. When vascular action becomes much excited, the nitrate of potash, or the muriate of ammonia, may be given with such of the foregoing as are chemically compatible with them; and digitalis or tartarised antimony may be prescribed in the more inflammatory cases, and when the bowels are not irritated.

312. *f.* Various *urgent symptoms* require to be palliated during the advanced progress of the disease. Great heat of skin will be relieved, and consequent perspiration diminished, by cold or

tepid sponging the surface with equal parts of spirits, of solution of the acetate of ammonia, and of rose water. — *Restlessness* may be diminished by the anodynes already enumerated, or by prussic acid, combined with gentle tonics and refrigerants. Camphor, henbane, and the nitrate of potash, or muriate of ammonia, are the most generally useful in this state, excepting when the bowels are relaxed, when opium, hop, or the extract of poppy should be substituted. When *diarrhæa* supervenes, the pathological conditions to which I have attributed it (§ 306.) should be kept in view, as a treatment founded upon them is the most successful in practice; — we should endeavour, in these cases especially, to counteract the contaminating influence of morbid secretions upon the circulation, and to impart tone to the digestive mucous surface. The means that are calculated to fulfil these intentions, are also restorative of vital power, enabling it thereby to resist the extension of disease. The tonics and narcotics already mentioned (§ 311.) may be employed with these views; or certain of them may be conjoined with the chlorates of lime, potash, or soda; or with Kréosote; or with cretaceous mixtures; or these latter may be given with the compound tinctures of camphor or of opium; or with tonic and astringent extracts.

313. *g.* The *Diet and Regimen* are most important parts of the treatment of hectic; but they should be varied, or even different, in its different states. In most cases the food should be digestible and moderately nourishing. The milk of asses, or milk warm from the cow, goat's milk or whey, fresh butter-milk, warm milk with one or two tea-spoonfuls of very old rum in it; shell-fish, especially oysters; farinaceous and mucilaginous articles of diet; jellies, particularly those made with Iceland or Carrageen moss; and grapes in considerable quantity; have severally been recommended, and are more or less beneficial, according as they are appropriately prescribed. In most cases, the patient should take very gentle exercise in the open air, when it is mild, and expose himself to the sun and air as much as possible without the contingent risks. In some instances, especially those caused by debilitating discharges, by caries, &c., old wine, especially sherry, port, hermitage, and Burgundy, may be allowed with much benefit; and either old Madeira or sherry may be taken in Seltzer water. It is in such cases, especially, that the mineral waters recommended above (§ 309.) are most serviceable. (See also the articles ABSCESS (§ 55.), ABSORPTION (§ 15.), BLOOD (§ 143. *et seq.*), MESENTERIC DECLINE, TUBERCLES, TUBERCULAR CONSUMPTION, &c.)

BIBLIOG. AND REFER. — *Aëtius*, Tetrab. ii. serm. i. cap. 29. — *Avicenna*, Canon. l. iv. fen. i. tr. 4. cap. i. — *O. Caesar*, De Hectica Febre, fol. Venet. 1557. — *Montanus*, Tractatus de Febre Hectica, 8vo. Lugd. 1560. — *J. Rehfeld*, De Hectica Cognitione et Curatione. Erf. 1634. — *Zacutus Lusitanus*, Med. Præst. Histor. l. iv. n. 40. — *Foress-tus*, l. iv. obs. 2—5. — *Vesti*, De Hectica Cardiaca. Erf. 1697. — *Morton*, Phthisiolog. l. i. cap. 5. — *G. E. Stahl*, De Febre Hectica. Halæ, 1699.; et De Feb. Hect. Abscessum Intern. Comite. Hal. 1710. — *Hoffmann*, De Febre Lenta. Opera, vol. ii. p. 182. — *Fischer*, De Phthisi Gastrica. Erf. 1719. — *Burchard*, De Febribus Mesentericis Acutis. Rost. 1727. — *Browne Langrish*, Theory and Practice of Physic, 2d ed. p. 257. — *Arnold*, De Hectica Stomachica. Altdorf. 1743. — *Brendel*, De Phthiseos Hecticaque Discrimine et Setaceorum utrobique usu. Goet. 1754. — *Petit*, Traité des Malad. Chirurg. t. i. p. 125. (*From caries*.) — *Büchner*, De Hecticorum Deliriis, malo Omine oriundis. Halæ, 1765. — *Grant*, On Fevers, &c. Lond.

771.—*M. Griffith*, *Observat. on Hectic and Slow Fevers*, 2mo. Lond. 1776.—*F. Curtius*, *Animad. in Febrem Hect.* 8vo. Dresd. 1781.—*Fournier*, *Beobacht. über das Schleichende Fieber*, &c. Leips. 1782.—*Heberden*, in *Med. Transactions*, vol. ii. part i.—*Tynka*, *Historia Febris Hecticæ omnis Ævi Observata continens*. Vindob. 1783.—*Willan*, *On Diseases of London*, Med. and Phys. Journ. 1802, vol. i. p. 295.—*F. J. V. Broussais*, *Recherches sur la Fièvre Hectique*, 8vo. Paris, 1803.—*Pinel*, *Nosographie Philosophique*, t. i. p. 357. 6th edit.—*Otto*, in *Stark's Archiv*, b. iii. p. 383.—*M. A. Petit*, *Traité de la Fièvre Entero-Mésentérique*, 8vo. Paris, 1814.—*Hildenbrand*, *Institut. Med. Pract.* vol. iv. p. 774.—*Fournier et Vaidy*, *Dict. des Sciences Méd.* t. xv. p. 290.—*Coutanceau*, *Dict. de Médecine*, t. x. p. 546.—*M. Good*, *Study of Medicine*, edit. by *S. Cooper*, vol. ii. p. 215.; et *Percival*, in *Ibid.* p. 217.—*J. Bouillaud*, *Traité des Fièvres dites Essentielles*, &c. p. 465.—*Brown*, *Cyclop. of Pract. Med.* vol. ii. p. 245.

XVI. FEVER, CONTINUED. SYN.—Πυρετὸς συνεχής; *Febris continens*; *F. continua*; *Febris continua continens*, Burserius; *Enecia*, M. Good; *F. Septenaria*, Auct. Lat.; *Anhaltendes Fieber*, Germ.; *Fièvre continue*, Fr.; *Febbre continua*, Ital.

314. DEFIN.—*The changes constituting fever proceeding in one series, frequently with a tendency to exacerbation and slight remission.*

315. i. *Of the Division of Continued Fevers.*—Fever of a continued type are so remarkably modified by the circumstances stated above (§ 43.), by varied combinations of causes, states of constitution, predisposition, and by epidemic influence, each form insensibly passing into the one nearest allied to it, that every attempt at arranging them must necessarily be more or less conventional, and depend upon characters, which, although the more prominent and universal, as respects certain species, yet occasionally disappear, or blend with others distinguishing correlative forms and varieties. Owing to this, circumstance, the divisions of continued fevers adopted by writers have been arbitrary and varied. STOLL arranged them as *Inflammatory*, *Putrid*, *Bilious*, and *Pituitous*,—a division not materially different from that previously made by SYDENHAM HOFFMANN, and BOERHAAVE.—CULLEN, PARR, and others distinguished three species—namely, *Synocha*, *Synochus*, and *Typhus*: J. P. FRANK, also three—the *Inflammatory*, *Gastric*, and *Nervous*. RICHTER, four—the *Inflammatory*, *Nervous*, *Putrid*, and *Gastric*. BORSIERI, five—the *Ephemera*, *Simple Synochus*, *Putrid Synochus*, *Slow Nervous Fever*, and *Hectic*. J. FRANK, four—the *Typhoid*, *Gastric* or *Bilious*, *Rheumatic* or *Catarrhal*, and the *Inflammatory*: and HILDENBRAND, five—the *Inflammatory*, the *Septic*, *Nervous*, *Gastric*, and *Hectic*. Dr. FORDYCE, in his dissertations, attempted no arrangement beyond that into the *regular* and *irregular* forms. PINEL, desirous of giving precision to his descriptions, divided fevers of the continued type, into *Inflammatory*, *Bilious* or *Gastric*, *Mucous* or *Pituitous*, *Putrid* or *Adynamic*, and *Malignant* or *Ataxic*; and has justly considered the plague and puerperal fever as distinct from the fevers belonging to these orders. A nearly similar arrangement has been followed by BOISSEAU and BOUILLAUD. Dr. WILSON PHILIP has described only two species—*Synocha* and *Typhus*. Dr. M. GOOD, three—*Inflammatory*, *Typhous*, and *Synochal Fever*. HUFELAND, four—*Inflammatory Fever*, *Nervous Typhus*, *Putrid* or *Infectious Typhus*, and *Gastric Fever*. Dr. TWEEDIE has divided continued fever into *Simple*, *Complicated*, and *Typhus*. Dr. ARMSTRONG, into the *Common Simple*, *Common Conges-*

tive, and *Typhus*: and Dr. BURNE, into the *Inflammatory* and the *Adynamic*, either of which he believes may be simple, or associated with local inflammation. Dr. ARMSTRONG, having recanted his former opinions respecting fever, and discarded the influence of infection in causing it, has denied the existence of a synochal or simple inflammatory fever; has considered congestive fever to pass into simple fever, or inflammation, when excitement supervenes; and has argued, that typhus always arises from malaria, is essentially the same disease as intermittents and remittents, and differs from them only in type. The various fallacies into which he has fallen respecting the diseases under consideration, will appear more fully hereafter.

316. Dr. SOUTHWOOD SMITH has viewed continued fevers, “as one great malady never differing in nature, but in every two cases differing in intensity, and giving rise by these differences to various forms of disease”—that this difference alone is the cause of the different forms it assumes. He accordingly admits only of grades of intensity—the first or lowest grade being *Synochus mitior*; the second, *Syn. gravior*; the third, *Typhus mitior*; the fourth, *Typh. gravior*.

317. This view, as involving fundamental principles of pathology and practice, which, if implicitly followed, would lead to very series results, requires a few remarks. Dr. SMITH's position is that continued fever never differs in nature. Now, by the nature of a disease is understood its seat, the tissues affected by it, or the exact pathological condition, whether of vital function or of structure, constituting the malady. If therefore, it can be shown that, in the continued fevers, even of temperate climates, the state of function and organisation are always the same in kind—that the vital manifestations and structures are affected in them all in a similar manner, but in different grades of severity,—it will be conceded that fever never varies in its nature. As this position, however, is merely assumed, without any attempt at ascertaining its stability, it must still be doubted, until either it or its opposite be proved. If we closely observe the mode as well as the degree in which the vital manifestations, in the nervous system, in the muscular system, in the blood and vascular system, &c. are affected, in the various forms of continued fever, and the consequent changes in the various functions and structures, we cannot fail of concluding that, however nearly they all may approximate each other, they differ as essentially in nature as in grade.—What is the difference as to intensity between the continued fevers enumerated above (§ 44.), or even between the epidemics observed at different epochs and seasons, if intensity be the only source of distinction? In the paragraph just referred to, other essential differences, arising out of the prominent affection of particular functions, tissues, and systems, are stated; and from these, as well as from the very distinct and even opposite manner in which the vital manifestations, more particularly the organic nervous power, are affected, the varieties of continued fevers result. If fevers were modified in severity merely, they would be mutually convertible into each other, and either species indifferently would rise from one and the same cause. But no such occurrences are observed; for the nature, as well as the intensity, of

fever varies with the kind and combination of causes producing it. Will infectious typhus communicate simple continued fever, or bilious inflammatory fever, or gastric fever, or climate fever, or epidemic yellow fever; or will these species of continued fever arise from the same cause, and admit of being resolved into grades of intensity merely? No one capable of distinguishing disease ever saw the typhus miasm occasion any of these fevers, nor the causes usually giving rise to either of them produce typhus. Neither of them is convertible into the other; and however closely allied or equally severe certain varieties of each may be, something more than difference in intensity is to be recognised. The causes of each are distinct, the features of each different, the course and duration different, the external appearance and internal lesions different, and yet no difference as to severity or intensity may often be ascertained by the ablest pathologist. Is it to this assumed difference of intensity merely that we are to impute the admitted fact, that, in the very same period or stage, the treatment which is beneficial in the one fever is death in the other,—that large depletions are required at the commencement of one species, and most injurious at the same period of another? The very varied, and even opposite, treatment required in several epidemics, even when the same organs are prominently affected, cannot be referred to grades of severity; for fevers, even of this climate, may be equally violent or severe, and terminate fatally after the same duration, and yet be aggravated, or ameliorated, by opposite measures. The great pathological truth,—which ought never to be overlooked, and without a full recognition of which, in estimating the nature and treatment of fevers, our experience will be worse than useless—will be deceptive, and our knowledge worthless empiricism,—namely, that the vital manifestations may, all or severally, be variously affected by the causes productive of fever—may be lowered or heightened, or otherwise changed; and that these changes, whether as to *kind* or as to *degree*, should be made the basis of distinction, in arranging the varieties and forms of fever, and in devising indications for their cure. In the following inquiry, something more than intensity of action will be recognised and made the grounds of arrangement and treatment, inasmuch as each of the several kinds of fever presents characters having stricter reference to the nature, than to the grade, of disorder—to the state of vital manifestation in the several systems and structures, and to the seat and grouping of the predominant lesions, much more than than intensity of morbid affection. The arrangement, therefore, about to be followed, will not materially differ from the sketch already given (§ 44.). But all the kinds of fever there enumerated cannot be treated of under this head; their importance, and, still more, certain peculiarities of character, as well as of the circumstances in which they occur, requiring, conformably with the form of this work, that they should be discussed in separate articles. In considering, therefore, the various kinds of continued fever, those only which are most intimately related to each other will be comprised under this head; the more simple states being first described, and the more complicated and dangerous forms successively reviewed.

318. ii. *Of the Prognostic Symptoms in Continued Fevers.*—*a. The countenance.*—When the expression is serene, confident, clear, and animated, the disease is of a mild and uncomplicated kind; in the advanced stages this state indicates a favourable crisis. If the face is large, injected of a crimson or dark colour, with prominence of the eyes, or is agitated and anxious in the early stages of fever, the morbid excitement and determination to the head occasioning this appearance will speedily exhaust the powers of life, and, in a later period, will soon be followed by malignant symptoms, or fatal collapse. When the countenance is tinged of a yellowish or earthy hue, or is withered-like or sunk, or constricted, and especially if it exhibit distress, or want of serenity and confidence, extreme danger may be apprehended. A full, bloated, waxy, or livid countenance, particularly if it assume a tawny or mahogany tinge, indicates very dangerous congestion and approaching death.

319. *b. External surface.*—If the skin be soft and perfect in its sensibility, its heat not excessive, although augmented, but without a feeling of pungency or burning; and if its temperature be equally diffused; a mild attack may be expected. But when the skin is dry and harsh, as if thickened, and the heat is ardent, caustic, or unnatural; if the surface be little sensible, not readily acted upon by rubefacients or blisters; or if vesicated parts assume a dark or black hue; if the heat be ardent in the head or trunk, particularly at the epigastrium, and lowered in the extremities; if the skin be thickened, apparently withered, dusky, dark, or livid in parts, or yellowish, flaccid, tawny, streaked of different shades, lurid, or otherwise changed from its natural hue; if it be damp, greasy, puffy, or bloated, or studded with very dark petechiæ, vibices, or blotches, or unusual eruptions; or if parts pressed upon show any tendency to gangrene; great depression of the vital powers, with contamination of the circulating fluids, should be inferred, and the danger considered great. The more florid, however, the spots are, the less is to be feared; and when the black or violet petechiæ assume a brighter tint, a more favourable opinion may be formed. Large black or livid spots are often attended by dangerous hæmorrhage from the bowels. Small dusky brown spots, like freckles, are very unfavourable signs. Large livid or dark greenish marks seldom appear till very near the fatal period. (HUXHAM.)—If the skin be covered by warm, general, fluid and copious perspiration, attended by an open or free pulse, a favourable issue may be expected. But, if the perspiration be cold, clammy, scanty, or partial, with a nauseous or disagreeable odour, especially if the pulse be weak, small, very frequent, oppressed, or irregular, there is much danger. The occurrence of erysipelatous or erythematic inflammation in the seat of sores or of abrasions; the breaking out of old ulcers, or the opening of cicatrices; or a foul, gangrenous state of old sores; denote sinking of the powers of life, and a tendency to a dissolution of the textures.—*Emaciation*, when moderate, and in due relation to the duration of the disease, is rather favourable; but, when it is excessive or rapid, it indicates ulceration in the bowels. Little or no wasting, or a bloated and a soft or tumid state of the surface, is very un-

favourable, and, with discolouration, indicates a malignant malady.— The supine position; inability to turn or remain upon the side; falling down in the bed; or the head being buried deep in the pillow, from frequently throwing it back, or rolling it about; are indications of great danger.

320. *c.* The *abdomen* should be carefully examined, in order to form an idea of the probable state of the stomach, liver, spleen, and bowels.— Tension, oppression, and pain in the hypochondria and epigastrium, indicate predominant affection of the liver, stomach, or spleen; and, if to these be superadded sickness and vomiting, or a sense of internal heat or burning, tumefaction or tenderness, a harsh or caustic heat of the surface of these regions, with a parched skin, great thirst, dark-coated tongue, or great anxiety at the præcordia, a very severe form of fever, which will probably pass rapidly into exhaustion, with various malignant symptoms, should be anticipated.— A tympanitic or distended abdomen; soreness, tension, intolerance of pressure; or a sense of heat or burning; with a hot, harsh, and dusky skin; or with watery, foul, and morbid alvine discharges; or with a dark-coloured tongue; are most unfavourable signs. If any of these be accompanied with irregular or irritable bowels, and the state of the discharges just mentioned, or with mucous or bloody stools, asthenic inflammation, frequently with ulceration, or some equally dangerous lesion of the intestines, is present. If, at an advanced period, or after any of these symptoms particularly indicating disorder of the bowels, very acute pain suddenly occurs in the abdomen, extending from a circumscribed spot, with vomiting, collapse of the features, increased frequency and smallness of the pulse, abdominal distension, tenderness, &c., perforation of the intestines, and its consequences, have taken place.

321. *d.* *Anxiety* at the epigastrium and præcordia, with intolerance of pressure, depends upon the affection of the nerves of organic life, and serious lesion of the stomach and heart, and accompanies the worst forms of fever.— When attended by great restlessness, it is a most unfavourable sign. It often ushers in, and accompanies, dark, grumous vomiting in malignant and disorganising fevers.— *Singultus* is also often consequent upon this sensation, especially when the stomach, or superior and posterior parts of the liver, or both organs, are much affected. When it appears late in the disease, and has been preceded by pain, or by a sensation of heat or burning at the epigastrium, or by distension, oppression, and tumefaction in the hypochondria, dissolution is generally impending, particularly if the singultus be obscure or suppressed, and attended by anxiety or tension at the præcordia.

322. *e.* *Sensibility and excitability* vary much in different forms and stages of fever.— During moderate excitement, or reaction, when there is no disorganising tendency in any viscus, these manifestations of life are increased and equally diffused. But when the disease evinces at its commencement, or at an advanced stage, depression of the vital powers, with signs of contamination of the fluids, and tendency to a solution of the vital tone or cohesion of the tissues, the excitability or irritability is evidently diminished, either by the exciting causes, or by previously increased action,

or by both; and, in such cases, it is often unequally manifested, or concentrated in those viscera which are most severely affected. Morbidly increased sensibility and excitability, especially when so great as to give rise to spasms or convulsions, or augmented activity of all the senses, and of cutaneous sensation, are indications of affection of the membranes and surface of the brain and spinal chord, with a tendency to exhaustion, great in proportion to the degree of sensibility displayed.— In many of the forms of fever characterised by severe cerebral affection, followed by stupor, black tongue, low delirium, or coma, the vital manifestations under consideration are suppressed by the cerebral congestion, as well as unequally diffused or manifested. In all such instances the prognosis should be very unfavourable. But, when these vital states seem neither suppressed nor much lowered, nor very inordinately excited, nor unequally manifested, the surface of the body, the senses and nervous system generally, still retaining their susceptibility of external and internal impressions, a favourable issue may be expected. When the extremities are cold or clammy; the skin thick, dry, loose, or hide-like; the countenance sallow or collapsed, with increased or caustic heat at the epigastrium; we may infer the excitability to be unequally manifested; to be diminished in the periphery of the body and augmented in the more central parts, particularly if irritability of the stomach and bowels, with morbid discharges, be also present.

323. *f.* The *cerebral functions* are more or less disturbed in most continued fevers, and require, as well as the state of the *senses*, the close observation of the physician.— If the *sleep* be sound, undisturbed by frightful dreams or sudden startings, unattended by stertor, or moaning, and especially if the patient awakens in a more rational or refreshed state, a favourable issue is indicated. But, in proportion as the sleep deviates from this, are severity of disease and danger to be apprehended. An agitated, unrefreshing sleep indicates increased vascular action in the brain; and this is still more to be dreaded, if there be continued watching. Want of sleep often precedes delirium in its worst forms. Stupor, or a desire of sleep, without obtaining it, indicates great danger.— Violent and furious *delirium*, or early delirium, with great excitement of the circulation, irritable or rapid pulse, crimson-coloured and injected countenance, prominent eyes, and rending headache, indicate a state of vascular excitement, which will soon be productive of dangerous exhaustion, even if the brain escape immediate or irremediable mischief.— If delirium be attended by convulsions, startings of the tendons, or tremors, the danger is great, and often near. It is not less certain, although somewhat delayed, if followed by profound coma, relaxation of the sphincters, unconscious or involuntary discharges, &c. A mild delirium is not unfavourable when unattended by signs of malignancy, or extreme exhaustion of the powers of life; and if it appear in the advanced course of the disease, and chiefly in the evening. When it follows a state of stupor, it is often indicative of recovery. Very lively or very low delirium, the latter especially, is unfavourable. If the delirious patient states himself to be dying, he is generally right, although there may not be many signs of

danger present. Indifference to death, with an apparent desire of it, and a firm persuasion of being perfectly well, are also unfavourable.

324. *g.* If the *eyes* be calm, or slightly animated, in the early stages, a mild form of fever may be expected,—at advanced periods, a favourable change has commenced. Agitated, wild, terrified, confused, muddy, painful, prominent, turgid, or suffused eyes, indicate a most severe disease, at an early stage, and great danger in advanced periods, especially if the whites of the eyes become of a dusky or dirty yellow. Intolerance of light attends cerebral excitement; and rolling of the eyes, with a wild, unfixed stare, often precedes severe delirium or convulsions. A dull, sluggish state of the eyes, want of animation, sinking in their sockets, a dark hue of the conjunctiva, with a sad expression, are unfavourable. A pearly whiteness, with agitation and prominency, is a symptom of dangerous congestion of the lungs and liver; and, if succeeded by a dirty yellow hue, or dulness of the cornea, indicates approaching dissolution. Partial paralysis of the retina, indicated by black spots, or other dark objects floating before the eyes; closure or falling of the upper eyelid, or dosing with the eyelids half closed; are dangerous symptoms.—Slight *deafness*, without pain in the ears, is not an unfavourable sign.

325. *h.* The *tongue and mouth* furnish important indications in fevers.—In the course of the milder forms the tongue is foul, coated with a yellowish or cream-coloured mucus, and generally furred; it is sometimes a little red at the sides and apex, and rather dry, or moderately moist, in the centre. In proportion as it departs from these states, the danger is increased. If it be covered by a milky, whitish, or mealy coating, and if it be also large, flabby, or swollen, early in fever, an adynamic or malignant state of disease may be expected. If it become rough, dark-coloured, with prominent papillæ, and not particularly coated, but dark red, especially towards the sides, serious affection of the alimentary canal, or of the liver, should be feared; more especially if the symptoms referrible to the abdomen and these viscera be also urgent. If to these appearances be superadded dryness, and contraction of its breadth, serious or fatal changes within the head, or large cavities, have supervened. When the tongue is white, or coated with the papillæ, erect or excited, and the edges red and fiery, vascular action is then inordinate in some internal organ, although no other symptom may indicate this state; and vascular depletions are required. If it be covered by a deep yellow coating, congestions of bile in the biliary ducts and gall bladder are evinced; and if this pass quickly into an excited, dry, and brownish state, the supervention of congestion, or inflammatory action in the substance of the liver, or the digestive mucous surface, or in both, with diminished vital power, may be inferred. A dark or brick-coloured, or livid redness of the tongue, with a glossy surface, or a surface partially covered by a partly detached coating, or black crust, or with a dark, scanty, tenacious mucus in the mouth, or on the teeth, or lips, show extreme prostration of vital power, with contamination of the circulating and secreted fluids. A leaden-coloured, sodden, or parboiled-

like, flaccid, smooth, enlarged, tremulous, or diminished or shrunk, tongue, are all unfavourable signs. If this organ become, in the progress of fever, thickly covered by a dark or fuliginous coating, or exhibit, in addition, deep fissures, the apex and sides being of a brownish or dark hue, the adynamic state is extreme, and the digestive mucous surface will readily pass into ulceration or sphacelation, if, indeed, the former lesion have not already commenced.—Vital exhaustion, contamination of the fluids, and solution of the soft solids—the constituents of marked malignancy—are evidently present, if the gums readily bleed when touched, if they and the teeth are covered with a black viscid mucus; if the former discharge a dark dissolved blood, or ichorous bloody sanies; or if a similar fluid escape from the nostrils or posterior fauces. An inky state of the surface of the tongue sometimes ushers in these symptoms, and also evinces the malignant condition. On the other hand, if the tongue becomes cleaner at its edges or apex, or moister round the margin, particularly if other favourable signs appear, a salutary change has commenced.

326. *i.* *Thirst* is often very urgent, or even insatiable; but, although indicating the intensity of disease, it is not of itself a dangerous symptom.—The absence of thirst, especially when the tongue and fauces are dry, rough, and parched, is always an unfavourable sign. A constant desire of drink, yet the patient drinking little when it is given him, and a difficulty of deglutition, are very dangerous symptoms.

327. *k.* The *evacuations from the bowels* furnish important signs to guide the practitioner in the treatment and prognosis.—In the milder forms of fever the bowels are readily acted upon, and the evacuations are generally feculent, but varying in colour and consistence, according to the state of the biliary and other secretions, and the purgatives employed. When the stools give relief from uneasiness in the abdomen, or reduce fulness of it, a mild disease may be expected. If the most active cathartics are required to produce evacuation, the stools being watery, scanty, or otherwise morbid, and voided with a sense of confinement or difficulty, the abdomen being full, or tense, or hot and uneasy, a severe fever may be anticipated, and general or local depletions, or both, are indicated. If copious feculent stools follow this state, a favourable crisis may be looked for. Frequent, scanty, bilious evacuations, presenting every variety of colour, from a light green, or greenish yellow, to a greenish black, sometimes watery, at other times mucous and streaked with blood, occasionally feculent and extremely offensive, often accompany the worst forms of bilious or autumnal fevers, and indicate danger, particularly if they assume a pitchy appearance. When the stools are smooth, dark brown, or blackish, like treacle, the danger is great. When they are intimately mixed with blood, or bloody sanies, or purulent mucus, or are ochrey, very frequent and exhausting, organic changes in the mucous surface of the intestines, or in the liver, are evinced. If discharges of blood are found in the stools, especially if unmixed with other matters, ulceration in the large bowels may be inferred. If the

blood be grumous, black, and mixed with the fæcal matters, it has generally proceeded from the small intestines. If the stools consist chiefly of a light yellow or serous fluid, or are passed involuntarily or unconsciously, great danger may be apprehended.

328. *l.* The *urine* is always more scanty in fevers than in health, excepting during the premonitory and invading periods, when it is often pale and copious. As reaction is developed, it is diminished, and higher coloured than natural. In proportion to the extent of these latter changes, may the disease be considered as severe.— In the most dangerous forms of fever, particularly those characterised by morbidly increased action, rapidly passing into the malignant or adynamic states, the urine is extremely scanty, and its secretion nearly suspended. If it also present a muddy, or greenish brown, or greenish black hue, great danger exists. A greenish or dark urine is often observed in severe inflammatory, bilious, and gastric fevers, sometimes with a muddy appearance, or with darker clouds in it. When this kind of urine becomes paler, deposits a sediment, especially if it assume a brick colour, and is abundant, a favourable change is taking place. If this secretion become more copious and more natural, with a due deposit, the fever is declining. But if it be more scanty, or suppressed, or passed involuntarily, or if retention occur, extreme danger exists.

329. *m.* The *respiration* is generally frequent or irregular in all severe forms of fever. When it is also attended by a sense of constriction or oppression, or when it becomes short, hurried, difficult, and laborious, or suspirious, great danger is evinced. A still, quiet respiration, the motions of the thorax being scarcely perceptible, is also unfavourable, especially when stupor or torpor is present. A slower state of respiration than natural, occasionally interrupted by deep sighs, or by convulsive heavings of the chest, is a sign of danger. A very hot state of the expired air early in the attack indicates an inflammatory or malignant fever. A coldness or rawness of the expired air, particularly if it have a fishy or otherwise offensive odour, indicates either a malignant disease or approaching dissolution. In all cases of disordered respiration, especially if cough be present, the stethoscope should be used, unless there be any dread of infection.

330. *n.* The *pulse*, to the experienced and observing physician, furnishes the chief indications of danger, as well as of treatment. If it be under 100 or 110, at the same time free, energetic, and regular, the disease will be mild and tractable. But if it rise above the latter number, if it become also irregular, tumultuous, or oppressed, then danger is to be dreaded. If it reach 120, and especially if it rise above this number, the danger is very great. If it mount to 130, recovery seldom or never occurs, unless in cases of hysterical and irritable females, or those in the puerperal state. Smallness, weakness, irregularity, intermissions, or startings of the pulse; or a too open, broad, and very soft pulse, the pulsation ceasing upon slight pressure of the finger; are all indications of great danger. If it become less frequent, more free and expanded, a favourable change may be hoped for. An intermission every fifth or

sixth beat, at the acme of the disease, is sometimes an indication of crisis.

331. *o.* The *blood* taken from a vein furnishes very important indications, both as to the means of cure and as to the result. — If it be not materially different from natural, or if the crassamentum be merely slightly cupped, a favourable opinion may be formed. But if the clot be loose, gelatinous, or imperfectly separated from the serum; or if it be dissolved or broken, and tinge the serum; or if the serum be of a brownish or greenish hue; or if the more remarkable changes mentioned in the article BLOOD (§ 129. *et seq.*) be present; most dangerous disease obviously exists, depending no less upon the alteration of this fluid than upon depression of the vital manifestations with which this alteration is associated, and of which it is usually the consequence.

332. *p.* The prognosis, moreover, depends very much upon the *form of the fever*; at least one third of the more malignant kinds of fever terminating fatally, according to the usual modes of treating them, and not more than one case in fifteen or twenty of the milder forms. — The *nature of the prevailing epidemic* must be taken into account, in connection with the *circumstances* that seem to favour or extend it. Of these the most remarkable are full living, and a plethoric state of system. Although the epidemic fevers, lately prevalent in Ireland, have been produced by the wretched circumstances of most of the lower classes, and have readily spread, owing to these and other allied causes, the mortality has not been generally great in these classes, in proportion to the number affected; whereas, amongst the higher orders, the extension of fever has been relatively less, but the proportion of deaths to the affected much greater, than in the lower. Persons who live chiefly on animal food, or who partake of it very largely, are in greater danger from continued fever than those who live abstemiously, or chiefly on vegetable diet.

333. *q.* The *age and strength* of the patient should also be taken into the calculation.—Early age and strength do not furnish the protection from fever, nor yet from an unfavourable termination, that is very generally supposed. Indeed, in some malignant fevers, the young and strong are placed in the greatest jeopardy; as in epidemic yellow fever and plague. The continued fevers of this climate are most prevalent from the fifteenth to the thirtieth years. The proportion attacked during this period may be reckoned, as to the other periods of life, as three are to two; whilst the number of deaths in the former, compared with the latter, may be considered as ten to nine; showing that, although the predisposition to fever is greatest at this particular period, the danger is somewhat less.

334. *r.* *Sex* has but little influence as to the prognosis of fevers in this country. But, in warmer and more unwholesome climates, and in certain epidemics, it should have considerable weight.—In fevers proceeding from infection, marsh exhalations, and suppressed perspiration, and in various epidemics, a larger proportion of males is generally attacked, owing chiefly to the circumstance of their being exposed more than females to those causes. The latter are, also, upon the whole, less severely affected, owing — 1st, to their much less exposure, and the consequently less intense

action of the causes ; — 2dly, to the less rigidity of their fibres ; — and 3dly, to the periodic discharges to which they are subject.

XVII. FEVER, ARDENT; *Febris Ardens*. CHARACT.

—The stages or series of febrile phenomena proceeding with rapidity and regularity ; the period of excitement being very acute, and attended by greatly increased vascular action ; no morbid seminum or infectious miasm being generated in their course, as observed in modern times.

336. Under the generic denomination of *Ardent Fever* may be comprised those more acute forms of fever which are attended by great vascular excitement, and which, owing to their nature and severity, generally run their course in from one to fourteen days, and are but seldom prolonged beyond nine or eleven days. They may be divided into the more ephemeral and the inflammatory.

i. EPHEMERAL FEVER. SYN. — *Diary Fever*, *Febricula*, *Ephemera*, *Febris diaria*, Auct. Var. ; *Simple Fever*, FORDYCE ; *Das eintägige Fieber*, Germ. ; *Fièvre éphémère*, Fr. ; *Effimero*, Ital. ; *Efemera*, Span.

337. CHARACT. — Increased frequency and strength of pulse ; with heat of skin, headache, thirst, and white excited tongue ; terminating in perspiration generally within twenty-four hours.

338. *Simple Ephemeral Fever* may occur in a very mild and slight form, — the *Ephemera mitis* of Dr. GOOD ; or in a much more acute state, — the *E. acuta* of this writer. But intermediate grades between these may also present themselves.

339. A. Causes. — The mildest variety is usually caused by excessive or prolonged muscular exertions ; by the more violent passions and emotions of the mind ; by protracted study and mental occupations or excitements ; by vicissitudes of temperature, and exposure to a warm sun ; and by disorder of the digestive organs, proceeding generally from the quantity and nature of the ingesta. — The more acute states usually arise from the above causes, from a surfeit, from temporary obstruction or congestion of the biliary organs, from the presence of fæcal collections and morbid excretions in the prima via, and from violent exercise under a hot sun.

340. B. Symptoms. — a. The milder form of ephemeral fever is rarely preceded by chilliness or rigors ; but it generally commences with lassitude, yawning, stretchings, and a sense of irritation or of undue excitement. The pulse becomes frequent, the skin hot, and the head pained. The patient tosses in bed — is restless ; cannot sleep, or sleeps in a very disturbed and interrupted manner ; and his tongue and mouth are dry. These symptoms frequently commence in the afternoon or evening, and subside, in the course of the succeeding morning, in a gentle perspiration ; thus terminating in from eight to fourteen hours. But often, also, when the cause has been more severe, and the disorder has come on at a later hour, the patient continues feverish in the morning after a restless night ; is indisposed to leave his bed ; feels unrefreshed, and unable to make any exertion ; and passes the day in disquiet. Towards evening, the restlessness and other febrile symptoms increase ; but in the night, or at an early hour in the morning, he falls into a quiet sleep ; a perspiration breaks out ; and he awakens refreshed and restored.

341. b. The more acute form often begins — especially when it is caused by disorder of the digestive organs, or by cold — with chilliness or rigors, succeeded by great heat of skin and throbbing pain of the head. The pulse is frequent, strong, and full ; the face is flushed ; the urine high-coloured ; the tongue is white, the papillæ erect ; and the secretions and excretions are diminished. These, and the usually attendant symptoms — as restlessness, languor, want of sleep, and general uneasiness — having continued from twelve to twenty-four hours, a free perspiration supervenes, generally towards morning ; the urine deposits a sediment ; and the disorder disappears. When this form of fever proceeds from mental emotions or excitement, and from exposure to a hot sun, or from muscular exertions in warm weather, or from a rapid transition to a hot climate, it is seldom or never preceded by chills or rigors, and, if not actively treated by antiphlogistic remedies, is often prolonged beyond the period just mentioned, and assumes all the characters of the next species — *Inflammatory Fever*.

342. C. Diagnosis. — These states of disorder may be mistaken for the commencement of some one of the more serious forms of fever. But they may readily be distinguished by ascertaining their causes ; by the absence of the usual premonitory signs of fever ; by the sthenic and acute vascular excitement, nervous energy being very little impaired ; by the rapid increase of the heart's action ; by the slight depression of the muscular powers ; and by the circumstance of pain being either hardly complained of in the loins and limbs, or altogether absent.

343. D. Treatment. — The febrile symptoms soon subside after the digestive canal is freely evacuated, especially when they have arisen from the irritation produced by retained excretions. When they are caused by the ingesta, an emetic should be given immediately, and its operation promoted by the usual means ; but it is contra-indicated in all other cases. Afterwards a dose of calomel ought to be administered, and allowed to act upon the secretions for five or six hours. Cooling saline purgatives, conjoined with small doses of antimony, or of ipecacuanha, as advised by VATER and GIANELLA, or of the spirits of MINDERER, repeated at short intervals, will then hasten recovery, and remove the morbid secretions which have disposed the frame to these febrile attacks. — When the disorder has been occasioned chiefly by atmospheric vicissitudes, diaphoretics, especially after the bowels have been freely evacuated, and a tepid or warm bath, are more particularly indicated.

344. If the febrile attack have been caused by inordinate mental excitement and exertion, or by fits of passion, by anxiety or other affections of mind, cold should be applied to the head, in the form either of affusion, of cold water, cold sponging, evaporating lotions, &c. ; the bowels freely evacuated, and diaphoretics prescribed. — If it be produced by exposure to, or by muscular exertions under, a hot sun, and whenever vascular action is excessive, or the patient plethoric, full bloodletting ought to be practised previously to the last specified means, which should be assiduously employed, and accompanied by cold sponging of the surface, and the internal use of refringerants and saline medi-

cines. The febrile attacks which follow exposure to the sun in warm climates, or even the quick transition from a cold or temperate to a hot country, when treated thus actively at their commencement, generally subside within twenty-four hours. But it is comparatively rare that a seasoning or climate fever runs its course in so short a time, unless in delicate or thin persons, and when the attack is very slight. In these cases, particularly when the stomach is irritable, much benefit will accrue from the frequent exhibition of small doses of the nitrate of potash, or of it and the muriate of ammonia, in solution, as prescribed by HILLARY, nearly as follows:—

No. 221. Potassæ Nitratis gr. xx.; Ammoniæ Muriatis gr. xij.; Mist. Camphoræ 3 vj.; Aquæ 3 x. Misce; fiat haustus, quartis vel sextis horis sumendus.

BIBLIOG. AND REFER.—*Galen*, De Differ. Febr. l. i. c. i. —*Paulus Ægineta*, l. ii. c. 15. —*Orribasius*, Synop. l. vi. c. 6. —*Avicenna*, Canon. l. iv. fen. i. tr. i. cap. 5. —*Sennertus*, De Febr. l. i. c. 6. —*J. Lommius*, Medicin. Observ. l. i. de Febr. Diaria. —*Horstius*, Opera, vol. ii. p. 1. —*Zacutus Lusitanus* Med. Pr. Hist. l. iv.; et Pr. Admirab. l. iii. (*Ex vino et venere.*) —*Forestus*, Op. l. i. obs. 1—4. (*Vigilia, Æstus solis, &c.*) —*Vater*, De Ipecacuanhæ Virtute Febrifuga. Witeb. 1732. —*R. Manningham*, Sympt. and Nature, &c. of the Febricula, or little Fever, 12mo. 1746. —*Gianella*, De Admirab. Ipecac. Virtute in Febr., &c. Pat. 1754. —*Ludwig*, Institut. Med. Clinic. pars i. c. i. —*Elsner*, Beiträge zur Fieberlehre. Königsb. 8vo. 1789. —*J. P. Frank*, De Curand. Homin. Morb. t. i. p. 156. —*J. B. Burserius*, Institut. Medicinæ Practicæ, t. i. p. 272. Edit. Lipsiæ. —*G. Fordyce*, Dissert. on Fever, dissert. i. p. 30. —*Hufeland*, Conspect. Morbor. Classis i. Ord. i. Gen. i. Sp. 1. —*P. Pinel*, Nosographie Philosophique, &c. t. i. p. 18. —*M. Good*, Study of Med., edit. by S. Cooper, vol. ii. p. 110.

ii. INFLAMMATORY FEVER. SYN. — *Καῦσος*, Hippocrates; *Σύννοχος*, *Συνεχὴς φλεγματώδης*, Græc.; *Synochus Imputris*, Galen; *Febris Sanguinea*, Avicenna; *Synocha Biliosa*, Sennert.; *Febris septenaria*, Plater.; *Synocha simplex*, *F. acuta Sanguinea*, Hoffmann; *Febris continens vel Synocha*, Stahl; *F. continua non Putrida*, Boerhaave; *Synocha simplex*, Juncker; *Febris Inflammatoria*, Stoll; *F. Inflammatoria simplex*, Huxham and Hildenbrand; *Synocha*, Sauvages, Cullen, &c.; *Febris continua Inflammatoria*, J. P. Frank; *F. continens Inflammatoria simplex*, Selle; *Febris Sthenica*, Brown; *Enecia Cauma*, M. Good; *Dynamic Fever*, Stoker; *Calentura continua*, Span.; *Fièvre Angioténique*, Pinel; *Fièvre Inflammatoire continue*, Fr.; *Synoshische*, *Entzündliche Fieber*, *Entzündungsfieber*, Germ.; *Febbre Inflammatoria*, Ital.

345. DEFIN.—Pain in the head, back, and limbs; heat generally and greatly increased; pulse full, hard, and accelerated; thirst urgent; urine in small quantity and high coloured; the bowels constipated, with restlessness and anxiety.

346. A. CAUSES.—a. Disposition to, and predisposing causes of, inflammatory fevers.—If we view these fevers as affections of the vascular system chiefly, we may impute the disposition to become affected by them to the high irritability of the heart and arteries. As respects symptomatic fevers, this explanation may be conceded, inasmuch as the irritability of the different parts of the vascular system is derived from the same source, namely, the ganglial nervous system; and as all causes of irritation, which act with sufficient energy, relatively to the state of irritability, upon a single part of the system, affect the whole.—I here refer the operation of the irritating causes to the state of the irritability because their action is merely relative: therefore,

where the susceptibility to irritation passes beyond the usual standard, slighter causes will induce inflammatory and symptomatic fevers, than when it is either below or at the natural state. The condition of the irritability may vary not only in different individuals, but also in the same person at different epochs of life, and in the different organs of the body; the irritating causes thus exciting a relative action on different individuals, on the same person at different periods, and on the different viscera. But, although the disposition to be attacked by inflammatory and symptomatic fevers depends greatly upon the state of irritability, yet the disposition to be seized by other continued fevers does not appear to arise from the same circumstance. Indeed we perceive that increased irritability of the vascular system has little or no influence in favouring the operation of the exciting causes of several continued fevers; and that other manifestations of the living organisation, besides this, dispose more remarkably to them.

347. The predisposing causes of inflammatory fevers consist, first, of high irritability and tonicity of fibre, more especially when conjoined with vascular fulness and imperfect performance of any of the secreting or excreting functions—of an inflammatory diathesis, or of rude health, or of a gross habit of body;—second, of those states of season, climate, or atmosphere, which tend to produce this diathesis.—Hence these diseases occur chiefly in young adult men; in the plethoric, florid, and robust; in persons of a sanguine and irritable temperament; in those who have experienced the suppression of an accustomed evacuation, or who live fully and richly, or intemperately, or who pursue healthy occupations in the open air, or who habitually take invigorating exercise: and they are most prevalent in cold and dry, or very warm and dry, seasons and climates; in highly elevated localities; and amongst mountaineers, sailors, soldiers, and persons living in the country.

348. b. The exciting causes are—(a) Whatever directly stimulates, in an inordinate manner, the nervous and vascular systems; as, change of climate, especially migration from cold or temperate, to very warm, or dry, countries; exposure to the rays of a warmer sun than has usually been experienced; exercise in the sun's rays; the influence of dry winds; and very dry and cold states of the air; sudden vicissitudes of weather or of season; the accumulation of electricity in the frame; a heating or very full diet, warm condiments or sauces, and stimulating liquors; change from a low to a rich or full diet; the intemperate use of wines or spirits, especially in connection with atmospheric heat or vicissitudes; great bodily exertion; violent mental excitation and emotion;—(b) Whatever indirectly induces great excitement or vascular reaction; as, the impression of cold when the body is overheated and perspiring; sleeping on the ground, or in the open air, especially when exposed to the night dews, or to the moon's rays, particularly in warm and intertropical countries; the operation of marsh effluvia or malaria, especially under similar circumstances, or after intemperate indulgences; an overloaded state of the digestive organs, and obstruction of the excretions.

349. c. The chief causes of the varieties of this fever, which attack Europeans after their mi-

gration to warm climates, are—their early age, plethoric habits, and phlogistic diathesis; inattention to their bowels during the passage, and their use of salt provisions and spirituous or vinous liquors; increased intemperance, and incautious exposure to the sun and to the night air; excessive fatigue, or alternations of indolence and great exertion; and suppressed perspiration. Dr. JACKSON remarks that persons thus circumstanced rarely escape an attack of fever during the first year of their residence in a tropical country; and that the fevers that occur from these causes are often of the most aggravated kind, and rapid in their course, more especially among troops crowded in barracks or transport ships, where the heat of the climate is augmented artificially; the excess of heat influencing the febrile form, increasing the violence of the symptoms, and retarding the progress of recovery.

350. A question has arisen, as to whether or not the inflammatory states of fever in warm countries are caused by malaria, or by the other causes now instanced. There can be no doubt that malaria very frequently produces, in the plethoric, young, and robust, who have recently arrived in a hot climate, fever of an inflammatory and continued kind. But it must also be conceded that this fever chiefly occurs, even in persons thus constituted, during the dry season, and at times and in places where the existence of malaria is doubtful, or, at least, by no means proved: It is notoriously admitted that the inflammatory states of continued fever, in both the East and West Indies, appear among those soldiers, sailors, and civilians, who have not been long in a warm country, and who have not suffered from disease since their arrival; and that they take place chiefly during the dry and warm seasons, and in situations where the usual effects of malaria are never observed. This is the result of the experience of JACKSON, ANNESLEY, BOYLE, TWINING, CONWELL, and of other experienced practitioners in warm countries. It agrees with my own observations; and is even admitted by Dr. FERGUSON, who has gone much further than any one else in assigning malaria as the cause of intertropical fevers. I believe that the other causes assigned above (§ 346—348.) will, in these countries especially, produce fever of an inflammatory or bilio-inflammatory kind, in unacclimated Europeans; but that, when those causes are not associated with malaria, the fever resulting from them will generally subside, under judicious treatment, without evincing those dangerous symptoms which characterise fevers proceeding chiefly from terrestrial exhalations. Although some of the causes, especially those which relate to atmospheric temperature and climate, are very different as to their nature and action, yet they are mainly instrumental in producing fevers having many common features, but differing in severity and duration.

351. B. FORMS.—*a*. MILD INFLAMMATORY FEVER.—*a*. The fever which usually arises from cold and dry states of the air, in cold climates, in elevated situations, or in temperate countries, from atmospheric vicissitudes or other causes, assumes either *simple* or *complicated* forms, and is generally sporadic. Its epidemic occurrence is comparatively rare, especially in its simple state. It appears chiefly during winter and spring, or during north and north-east winds. In its com-

plicated states, which are most frequent, it forms a connecting link between idiopathic fever, and visceral inflammation; the local affection appearing in the early or advanced course of the former, the general disorder, or symptomatic fever, being consequent upon the latter. Thus inflammatory fever, and local inflammation, arise most frequently from the same causes acting upon different constitutions, habits of body, and states of local or general predisposition;—the simple form of inflammatory fever appearing in the young, plethoric, and robust, and in those possessed of no local predisposition; the complicated form taking place in persons whose previous ailments, habits of life, or avocations, have induced a disposition to predominant action in some important viscus, or from a concurrence or succession of external causes tending to the more especial disorder of one or more organs; and the primary local inflammation occurring from a predisposition of some part so great as to experience the onus of morbid action from the commencement, or soon after the impression of the exciting causes, or from the kind and concurrence of these causes.—In the *first* case, the whole frame seems to participate equally in the disordered action from the beginning: in the *second*, the disorder is also general from the first, with predominance of it evinced in some organ, either at a very early period, or in some advanced stage: in the *third*, the earliest symptoms of disease are referred to a particular viscus, and with the increase of such disease the whole system sympathises.

352. *β*. The *symptoms* of this variety are uniform in kind, but vary in severity. The premonitory signs are usually slight, or of brief duration. Hence the attack seems sudden, and is commonly ushered in with rigors or chills which are of short continuance; and, although often well marked, are occasionally so slight as to escape observation or recollection. The rigors or chills seldom recur, and are rapidly followed by general vascular reaction: the skin and integuments become full, injected, dry, hot, and burning; the countenance full glowing or red, and animated; the eyes injected, intolerant of light, but lively; the pulse frequent, strong, bounding, and full, sometimes hard or oppressed; respiration is frequent, and the expired air hot; the nostrils and mouth are dry; the tongue white, its papillæ excited or erect; and the lips full and red. The external appearance of the body evinces increased vital action; the whole surface appears glowing and animated; the internal sensations indicate generally increased vascular activity; and all the secretions and excretions are diminished or obstructed. The patient complains of great thirst and heat; of a severe or throbbing headache and vertigo; of anxiety at the præcordia; of increased sensibility, especially in respect of light and noise; of restlessness, watchfulness, and of frightful dreams; and of nausea or sickness. Taste and smell, owing to imperfect secretion on the surface of the organs, are impaired or abolished. The pulse seldom reaches 110 beats in a minute: and the heat of skin, although greatly increased, is in due relation with the activity of the circulation; and does not impart the harsh and unpleasant sensation to the hand of the observer, that characterises the more

unfavourable kinds of fever. Upon issuing from the vessel, the blood is usually red or florid, viscid, and thick; and separates perfectly into serum and coagulum: the former of which is limpid, watery, and in small quantity; the latter firm and sometimes cupped, but it seldom exhibits the buffy coat unless local inflammation have supervened.

353. The symptoms commonly increase in severity: the tongue becomes red and dry; the urine more scanty, and of a higher colour; the bowels more constipated, and the watchfulness more prolonged. In children, heaviness, drowsiness, or sopor, is frequently observed; and in adults, delirium or reverie sometimes occurs. All the phenomena usually are exasperated in the evening; their mitigation in the morning being attended by partial perspiration, or a relaxed, moist, and warm state of the surface. On the third or fifth day they reach their acme. At this period they often appear somewhat mitigated; but generally continue from two to four days longer, with manifest efforts at a critical change, which usually takes place about the seventh or ninth day, and rarely later than the fourteenth. The crises commonly observed are—hæmorrhages from the nostrils or from the hæmorrhoidal vessels, more rarely from the uterus; a copious and general perspiration; and a free secretion of urine, depositing a sediment. After the natural evolution of one or more of these evacuations, the symptoms rapidly subside, and convalescence speedily advances.

354. Although the *epidemic* occurrence of this form of fever is rare, instances have been recorded by INGRASSIAS, HOYER, HEISTER, VAN SWIETEN, and NAVIÈRES. In these, the symptoms and progress of disease coincided entirely with the description just given. — Bloodletting, and the rest of the antiphlogistic regimen, were adopted in these epidemics, and recovery took place in nearly all the cases.

355. γ . This fever may be said to be *endemic* in warm countries, during dry seasons, especially amongst Europeans who have recently removed to, or who reside in, these countries. But in them it frequently either assumes a severer form than that now described; or, after an imperfect effort at crisis, subsides into a state of dangerous collapse. *Relapses*, also, from errors in diet, or from intemperance and premature exposure, are much more common in them, than in persons residing in northern and temperate climates, generally owing to the concurrence of malaria in producing the fever, which, however, more usually assumes the form noticed hereafter (§ 366.). — Mild inflammatory fever is seldom protracted beyond seven days, unless it assume an unfavourable and complicated form. The continued fever, which occurs, during the hot and dry season, in the more southern parts of Europe, in the East and West Indies, and in other places within or near the tropics, particularly among the natives of cold and temperate countries who have recently removed thither, is generally either of this kind, or of the complicated or severe forms about to be described. The modifications it presents in different climates, result chiefly from the difference in the constitution and habit of the affected, from the intensity and concurrence of the causes, and from the association of malaria

with high grades of temperature, and the other circumstances already insisted on.

356. δ . *The complicated states of inflammatory fever* are more common than the more simple form, whether observed in warm, or in temperate and cold, regions. They depend chiefly—(a) on the season and climate;—(b) on the habits and occupation of those affected;—(c) on the concurrence and succession of the remote causes;—and, (d) on the previous state of particular organs.—They generally appear sporadically; occasionally they may be said to be epidemic; and in some places they are endemic.—Their *epidemic* appearance is chiefly in temperate countries during dry and hot seasons, and to a limited extent. Their *endemic* prevalence is observed under the circumstances assigned above (§ 355.). The complications may be either almost coëtaneous with the development of the fever, or consequent upon it, at any period of its course. They may be either so slight as to constitute merely an exalted affection of a certain organ, or a determination to particular parts; or so severe as to amount to a state of sthenic inflammation, rapidly passing into disorganisation.

357. (a) *The complication with predominant action or inflammation in the brain or its membranes*, occurs principally in very hot climates, in soldiers and sailors who have been exposed to a powerful sun, and been required to make considerable bodily exertion when thus exposed; in persons who have been intemperate, or have felt the exciting passions of the mind; and in those who have over-exerted their intellectual powers. In these, the fever is often very sudden in its attack; and the symptoms referable to the head indicate every grade of affection, from active determination of the circulation to this part, to fully developed inflammation. In many of such cases it is difficult to determine whether the local or the general affection is the primary one, so early has been their co-existence. In these, the patient sometimes falls down from the suddenness and severity of the affection, with a red or tumid countenance, injected or suffused eyes, and hot scalp, but without loss of consciousness. In others, predominant disorder in the head appears only in the advanced progress of the fever; the patient complaining of severe throbbing and distracting headache, and of a feeling as if the cranium would burst from internal distension. In either case, violent delirium, or maniacal excitement, often supervenes, and rapidly passes into coma, or stupor, or is removed by treatment. In all, the secretions and excretions are impaired, and the bowels constipated.

358. (b) *Predominant affection of the lungs, or pleura*, forming the pulmonary complication, is observed chiefly in cold or temperate climates during dry and cold seasons, and high winds, and in elevated situations. In intertropical countries it occurs only in the cooler seasons, and in elevated localities. Sudden vicissitudes of temperature, damp clothes, and exposure to the night air, after experiencing heat and fatigue, are the most common exciting causes.—The affection of the lungs is frequently either not fully developed, or is latent at the commencement of the fever, and is, consequently, often overlooked after it is established, unless it extend to the bronchi on the one hand, or to the pleura on the other; and then

the symptoms characteristic of either will direct attention to the complication. The stethoscope should therefore be employed whenever the breathing is laboured or oppressed in the inflammatory states of fever observed in the circumstances just stated. — This fever may present also prominent *Hepatic, Gastric, and Enteric disease*; but, in such cases, it will very nearly resemble the forms of fever described under the names *gastro-bilious* and *mucous*.

359. *b. SEVERE INFLAMMATORY FEVER.*—The disease described by the names of *Synocha Causonides*, by GILBERT; of *Synocha Causodes*, by MANGET; of *Synocha Ardens*, by SAUVAGES; of *Endemial Causus*, by MOSELEY; of *Inflammatory Endemic*, by DICKENSON; of *Climate or Seasoning Fever*, by several writers; and of *Endemic Yellow Fever*, by others; differs from the foregoing or mild form of inflammatory fever (§ 351.) only in grade, as insisted on by JACKSON, and proved by my own observation. This is the disease which most frequently attacks new comers into the West Indies, more especially sailors and soldiers; and which has, as already stated (§ 244—247.), been confounded by recent writers with the aggravated forms of bilious fever on the one hand, and with epidemic or pestilential yellow fever on the other. It was also prevalent during the last war among the British troops and sailors in the Mediterranean, and was described by BURNETT, IRVINE, BOYLE, BRUNTON, DOWN, and others; but it generally assumed a milder form than in the West Indies.

360. Whilst the milder form of inflammatory fever is common among the white and assimilated European population of warm climates, the *severe* or *aggravated form* occurs among those who have more recently arrived in them, and more especially among the young, the intemperate, the robust and plethoric, and those who are exposed to the sun, to very high temperature, and to the night air. In most warm climates terrestrial exhalations are also frequently more or less concerned in the causation of the continued as well as of the remittent types of fever: the type being determined, as shown above (§ 43.), by the nature, intensity, and combination of the causes; and by circumstances peculiar to the patient, particularly the novel, or the habitual, operation of the endemic influences to which he is exposed. But, although malaria may be a concurrent cause of this fever, especially in respect of persons who have recently arrived in the West Indies, yet I believe that, where its operation is most unequivocal, the kind of fever produced by it is different from this,—premonitory and cold stages preceding reaction, which is much less violent than in this, the resulting fever being of the bilious continued form, about to be noticed. — My experience fully accords with the observation of Dr. STEVENS, that, when a young Northern stranger is subjected soon after his arrival in the West Indies to the higher ranges of temperature, his clothes are soon drenched; and that, if he be exposed to a current of air in this state, the cold produced will constrict the vessels of the skin, and prove the exciting cause of fever, which, in favourable circumstances, will often be the mild form of inflammatory fever such as has been described above, and as is often observed in temperate climates. The causes which produce a severe affection in young and plethoric strangers, seldom affect the older residents, and

never the natives of the country or the dark races. Women and children, the aged, and the weakly, are much less liable to it than the robust and plethoric.

361. *a.* The *history* of this form of fever has not been given with the requisite precision by the various writers on it; most of them having mixed it up, in their descriptions, with the inflammatory varieties of remittent, and with the more continued states of fever produced by terrestrial or vegeto-animal exhalations, concomitantly with the other causes of intertropical fevers. — The aggravated form of inflammatory fever is seldom preceded by very marked premonitory symptoms. The attack is usually sudden. Giddiness, faintness, and general uneasiness, sometimes, however, precede it for ten or twelve hours.* There is, occasionally, a slight and brief chilliness at the commencement, especially in the less violent cases, rapidly followed by a sense of universal heat; by flushed face, frontal headache, and vertigo; by inflamed, heavy eyes, and great sensibility to light and sound; by pain in the occiput, neck, back, and limbs; and by a strong, full, hard, and accelerated pulse. A sense of heat, oppression, pain, or anxiety, is felt at the præcordia, sometimes with a dry cough, and pain in the side; respiration is quick, laborious, suspirious, or anxious; the tongue is white, excited, and its edges red; the fauces are arid, thirst urgent, and skin hot and dry; the urine is scanty, the bowels costive; and there is generally nausea, but seldom vomiting until some time after the attack. If the disease be not mitigated by treatment, the patient becomes extremely restless; the headache is rending and intense; vascular action is excessive; and the heat very great. Vomiting now supervenes, and follows the ingestion of whatever is taken to allay the urgency of thirst. The matters thrown off are

* Dr. MOSELEY states that there is a small degree of chilliness and horror, but never a rigor. Dr. JACKSON remarks that there is more or less of horror and shivering, but the cold is rarely great: Mr. DICKENSON, that there is increased excitement from the commencement, and that a slight chilliness at the onset is observed only in the slighter cases (§ 351.). Dr. STEVENS observes in several places, that there is no cold stage at the beginning; and Dr. BRUNTON, that languor, debility, and oppression are complained of, with chilliness. — This discrepancy in the account of the commencement of a most dangerous disease, and on a point so necessary to a knowledge of its pathology, may be in some measure explained. Dr. JACKSON has described this form of fever in connection with the more inflammatory states of remittent, from which it is perfectly distinct. The description of the other writers is more correct; for in several cases, in which I had an opportunity of observing the commencement of the disorder, no rigors, and hardly any chills, were remarked. Even some of those who complained of chills presented a warmer state of skin than natural. The pure climate fever I, therefore, infer does not commence with shivering or rigors; and seldom with chilliness, unless currents of air, cold, &c. have been concerned in causing it by suddenly checking the perspiration. But the continued fever attended with high vascular action, arising from malaria and atmospherical heat and vicissitudes, that is frequently met with in warm climates and in hot seasons, is commonly preceded by manifest premonitory symptoms, and by a cold stage. These two diseases, which frequently resemble each other very closely, have been generally confounded with one another, more especially as they are observed in the West Indies. Nor should this be a matter of surprise, inasmuch as that very many of the instances of fever which present themselves in men in the public services, as well as in civil life, arise from a combination of malaria with climatorial influences, and that the cases which are produced by a concurrence of such causes are perhaps more numerous than those which spring from either alone — from marsh exhalations on the one hand, or from high temperature and its vicissitudes on the other.

generally tinged with bile; and a bilious yellow suffusion of the skin is frequently observed. Bilious vomiting and purging occasionally occur with the yellowness of the surface, and, in the slighter cases, become a favourable crisis. There is often great drowsiness, but no refreshing sleep. These symptoms of excessive excitement proceed with various degrees of violence, and occupy a period of from twenty-four to sixty hours, but most commonly from twenty-four to forty-eight hours. During this period, blood taken from a vein is remarkably florid, warm, and fluid. The fibrin coagulates firmly, but the crassamentum is without crust, and is rarely cupped.

362. β . The excitement, having reached its acme, is quickly followed by exhaustion. This is indicated by a subsidence of the most urgent symptoms: the pain and heat are lessened; the skin becomes damp or clammy; and the patient has a sense of cold or slight chilliness. This delusive remission is a state of great danger: in some cases, it passes into rapid sinking—into a speedily fatal collapse: but, more generally, irregular determinations of blood, or indications of especial lesion of particular parts, are evinced before death ensues. With the diminution of heat and pain, the pulse falls; the countenance becomes anxious and distressed; the eyes sunk, the pupil dilated; vomiting continues without intermission, especially if the cerebral affection has abated; sometimes delirium is present, at others there is great insensibility or tendency to coma, and in these cases the stomach is more tranquil.

363. γ . *Discolouration* of the skin generally takes place in this stage; appearing in yellow, yellowish brown, and livid patches. It never occurs in the period of excitement, for it is quite dissimilar from the bilious yellowness occasionally observed in that period. It is commonly attended by passive hæmorrhage from the nose, gums, eyes, ears, &c., and by black and grumous vomiting. The change of colour, and hæmorrhage, proceed from exhaustion of the vital influence in the extreme vessels, and from the changes induced in the mass of blood. The matters thrown off the stomach consist at first of ingesta and serous fluid, often coloured by bile. In a more advanced stage they are ropy, mixed with numerous small shreds, flocculi, or films, which soon acquire a dark brown, purple, or black colour; but do not, at first, communicate much of the same tint to the fluid containing them. Afterwards, the matters vomited are more intimately mixed; and, from dark-coloured blood which has been effused into the stomach, vitiated bile, and other morbid secretions, assume a dark or coffee-grounds appearance. At the same time, dark-coloured matter, resembling tar mixed with black blood, is freely discharged from the bowels.

364. The other symptoms characterising this stage, and preceding dissolution, are—soft, quick, intermitting, or irregular pulse; clammy, cold, or partial sweats; deep and heavy respiration; coldness of the extremities; black urine, or suppression of urine; singultus, convulsive sighs; tremors and subsultus tendinum; faltering speech: low muttering or raving delirium; strugglings to get up in bed; dark or raw appearance of the tongue; livid blotches over the body, particularly the præcordia; faintings or coma, and glazed eyes.—The blood at this period is black, thin, and dissolved,

its fibrin seems diminished, and it does not separate into crassamentum or serum; or if it does, the former consists of a thin dark jelly, with the black colouring matter precipitated towards the bottom of the vessel.

365. Such is the usual progress of severe inflammatory fever, as it fell under the author's observations, and as observed by the most eminent writers, under circumstances which seemed to preclude the influence of marsh exhalations. It has been a most prevalent and destructive disease in the West Indies and Mediterranean, during hot seasons, amongst sailors and soldiers unseasoned to these climates. It is not liable to recur; and, unlike the continued form of fever caused chiefly by malaria or marsh exhalations, it is neither preceded by, nor passes into, disease of a periodic type, nor is followed by enlargements of any of the abdominal viscera, unless the patient has been exposed to such exhalations during convalescence. A first attack prevents a second, if the individual continue in the climate which caused it; but if he return to a cold country, and reside there until the energy of his system is restored, he becomes liable, upon his return to the hot climate, to a second attack, although less so than before, and in a milder form. Numerous proofs of this position have come under my observation. The fever will not prevent those diseases which proceed from marsh exhalations; but, if the person who has been seasoned by it, be seized by fever from this cause, the periodic type will be assumed, and visceral disease will frequently supervene.

366. Of a number of persons whom I treated in this fever in 1817, and who soon afterwards were exposed to marsh exhalations in their concentrated form, not one escaped agues, remittents, or dysentery.—I do not believe that this—the climate or seasoning fever—will exempt from pestilential yellow fever, although it may lessen the susceptibility to it, when the individual has not intermediately changed the climate.—Instances are numerous of seasoned persons—of those who have suffered this, the climate, or severe inflammatory fever—afterwards being seized with endemic or remittent fever, or with the pestilential disease.

367. δ . The *complications* of the grade of ardent fever are not so distinct as those presented by the milder form.—Some cases occur in which the *cerebral symptoms* are of greater intensity than usual, and closely resemble those of the most severe phrenitis. Such are most common in persons who have undergone much exertion whilst exposed to a very hot sun, shortly before the attack. But these symptoms, even when most violent, subside upon the supervention of exhaustion, and of the constant vomitings attending that stage.—In almost all instances, the *gastric affection* is excessive, particularly at an advanced period; but this is so characteristic of the malady, that it can hardly be called a complication. Often, however, when the cerebral affection is very great, the gastric irritability is not remarkable; and when the latter is excessive, the former is but slight.—*Biliary disorder* is sometimes very prominent, especially during the period of excitement; but it seldom amounts to more than functional disturbance—than an evacuation of bile, often in great quantity, and of morbid quality. There is evidently excited vascular action in the liver, as well as in other

important viscera, but it is not actual inflammation—at least, suppuration is never observed in dissection of fatal cases. (For *Diagnosis*, see § 243—247.; and *YELLOW FEVER*.)

368. *ε. Terminations and Prognosis.*—(a) Ardent or severe inflammatory fever, if not arrested by an early and energetic antiphlogistic treatment, rapidly terminates in exhaustion of vital power, with alteration of the blood, and organic change of the internal viscera, manifested especially in certain tissues.—1st. A resolution or subsidence of the excited action, without the supervention of the stage of collapse or exhaustion, seldom occurs, unless an appropriate treatment has been adopted. When the period of excitement is early and duly moderated, the severe symptoms of exhaustion either do not appear, or are very slight, debility of short duration being only present; and the patient rapidly recovers without any visceral disease. The stage of exhaustion is great in proportion to the violence of excitement, and in it the more unfavourable terminations occur.—2d. Organic change of some important organ may supervene during excitement, but rarely to an extent sufficient to produce death: it consists chiefly of vascular injection; discolouration and softening of parts; effusion of serum, lymph, or blood; and takes place most frequently within the head, and in the digestive organs. Purulent matter is never formed in this period, nor subsequently.

369. (b) In the stage of collapse, several changes occur; but death is owing rather to their conjoint influence, than to either singly.—1st. Exhaustion of vital power is always present, but not to an extent sufficient of itself to arrest the organic functions.—2d. Deterioration or change of the blood obviously takes place, and is shown by the state of this fluid both during life and after death; but the nature of this change is not fully ascertained; whatever may be its nature, it is merely consequent upon the altered state of organic nervous influence.—3d. It is very probable that exhaustion of this influence, and the resulting changes in the blood, so affect the irritability and tonicity of fibrous and contractile structures as to impair these vital manifestations, and thereby to favour or even to induce the alterations observed towards a fatal close, particularly those affecting the capillary system and mucous tissues; for the vital tone of the extreme vessels and of the digestive mucous surface being thus impaired, and the blood being more fluid and dissolved, as well as otherwise altered, hæmorrhage readily occurs, with discolouration of the skin and of membranous parts; the blotches, &c. observed during the latter stages, proceeding from these pathological states. That the head should appear to suffer especially during the period of excitement, is a necessary consequence of the physical relations of this part, in connection with general vascular excitement; and that the stomach and digestive mucous surface should evince predominant disorder at an advanced stage, may be ascribed to the irruption of acrid or vitiated secretions, particularly the biliary, to the state of organic nervous power, and to the changes induced in the blood.

370. *ζ. The Prognosis* entirely depends upon the period at which the disease is subjected to appropriate treatment, and upon the violence of the seizure.—When the stage of excitement has but recently commenced, the treatment about to be

recommended will generally arrest the disease; but the nearer this stage approaches its acme, or that of exhaustion, the greater is the danger, as those changes in the organic nervous influence, in the blood, and in the vital tonicity of contractile parts, may be considered as having begun; and active depletions are then not so well endured, nor productive of the same effects, as at an earlier period. When symptoms of collapse appear, the danger is very great; and in proportion to the progress of this stage and the urgency of its characteristic phenomena, particularly discolouration of the skin, black vomit, and passive hæmorrhages, it becomes extreme; recovery seldom taking place when these symptoms are fully developed.—When the cerebral affection is very remarkable at an early stage, the danger is even then great, as the effects of the treatment imperatively required, conjointly with the exhaustion consequent upon excessive action, will induce a state, which, although much less dangerous than that which would indubitably follow unrestrained action, is still attended by much risk, and often requires the prudent exhibition of restoratives, &c.

371. *The Duration* of this fever varies from two to six or seven days. A fatal termination commonly takes place on the fourth or fifth day.—On examination, *post mortem*, more or less evidence of increased vascular action, often amounting to inflammation, or its consequences, is observed in the membranes of the brain, in the internal surface of the stomach and bowels, and more rarely in the pleura and serous membranes of the abdomen. The digestive mucous surface is studded with numerous dark or ecchymosed spots, from which a fluid black blood seems to ooze. The liver is frequently congested, sometimes larger and softer than natural, and of a dark colour, owing to the quantity of black blood in its vessels. The spleen is somewhat enlarged, soft, and friable; and the omentum injected.—The serous as well as the mucous surfaces, especially in the abdominal cavity, often present livid or dark patches. The blood is every where fluid, black, and dissolved. The internal surface of the heart and large vessels, both arteries and veins, was of a dark red or livid tint in a few cases which I examined; but this point requires further investigation, as my opportunities were not sufficient for the satisfactory examination of it in respect of the universality of its occurrence, and the exact changes on which this appearance depends.

372. *C. Nature of the Disease.*—Fever produced by paludal miasms, or by infectious emanations from living or dead animal matter, are universally preceded by well-marked symptoms, characteristic of the stages of *premonition* (§ 33.) and of *invasion* (§ 35.). But inflammatory fever, especially in its more severe form, is seldom preceded by more than chills, unless cold, or other causes which suddenly arrest the cutaneous excretions, have been concerned in producing it. In these fevers, a poisonous agent has infected the frame, and more or less depressed its vital energies, particularly as they are manifested in the organic nervous system; vascular reaction being consequent upon such depression, as shown above (§ 95, 96.). But in this fever, the injurious agent, or primary pathological change, is generated within the system from the action of new and unwonted in-

fluences, generally climatorial or atmospheric. That this agent is not of a depressing kind, as respects its primary operation, is manifest, from the general absence, at the commencement of the disease, of those phenomena which indicate this kind of action. That it is of an irritating or exciting kind, may be inferred, not merely from the character of the invading symptoms, but also from the changes primarily induced by the remote causes.—If we inquire into the nature of these changes, we shall find them—1st, As respects the *mild inflammatory fevers* of cold or temperate climates, to consist—(a) of the organic and nervous excitement consequent upon the rapid and increased oxygenation of the blood during cold and dry states of the air, probably aided by the accumulations of the electro-motive agencies in the system which these states manifestly favour;—(b) of the super-abundance of irritating matters in the circulating fluids resulting from casual interruptions to one or more of the eliminating or depurating processes constantly going on in the animal economy;—(c) of the combination of these circumstances or primary pathological conditions. If we grant that the former of these obtains, it is very obvious that the occurrence of the latter will further excite and increase it; even a susceptibility to the former, as marked by high irritability of fibre, may be readily kindled into morbidly increased action, by causes of irritation which may have accumulated either within the vessels—in the blood itself; or external to them—in excreting organs and surfaces. These pathological states are the obvious results of concurrent causes, which primarily excite the sensible and susceptible parts of the frame, and which retard or prevent the discharge of irritating materials from the vital currents which supply and sustain these parts; the accumulation of these materials either increasing the excitement, or giving rise to it. It must necessarily follow that the excitation thus induced will exhaust itself to a degree, and with a rapidity, co-ordinate with its intensity, and thereby induce the phenomena characterising the advanced periods of the disease, which are especially remarkable in the severe or climate fever of warm countries.

373. 2d. As respects the *severe inflammatory or climate fever*, the procession of phenomena must necessarily be different, as it generally arises from causes different, or even opposite, to those just instanced—from a very high temperature, often conjoined with rich, nutritious, and heating food, stimulating drinks, and suppressed perspiration. Either of these is alone sufficient to induce the disease; but, when they co-operate, the effect is more certain and severe. They all act in a similar manner;—they excite the organic nervous system inordinately; increase the actions of the liver, and irritate its vessels; alter the constitution of the blood, causing it to abound with stimulating and injurious materials; and render the secretions and excretions acrid or morbidly exciting. Thus the most violent states of this fever often proceed directly from these causes, without any evidence of primary subaction or a cold stage, unless depressing agents, such as cold, human effluvia, or malaria, concur with them in producing disease; in which case the consequent fever will present features modified accordingly. If cold act upon persons who are under the influence of these ex-

citing causes, a slightly cold stage will often be directly induced thereby. If animal or vegetable miasms concur with them, the fever will present adynamic or malignant characters in proportion to the activity of either of these agents. But when the above direct causes of excitement act solely or principally, their influence upon the organic nervous system is very energetically expressed, and manifested throughout the vascular system, especially that of the brain, liver, and digestive mucous surface. Thus, inflammatory fever differs from the other varieties of idiopathic fever—1st, in its proceeding from causes, the primary action of which is exciting or irritating; 2d, in excitement or irritation being more or less evinced by it from the commencement.

374. Of the changes that take place in the advanced period of the disease, the most remarkable are those affecting the blood, and the digestive organs. As the stage of excitement merges into that of exhaustion, the *blood* changes from a florid to a dark colour; loses its property of separating into crassamentum and serum, and of firmly coagulating; becomes more fluid; and seems deprived of much of its fibrinous and albuminous constituents. (See art. *BLOOD*, § 128.) According to Dr. STEVENS, its saline ingredients are also greatly diminished. The chief cause of these alterations is evidently exhausted organic, nervous, or vital power; and this is further evinced by a loss of the tone of the extreme vessels, and of the irritability of the moving fibre, always co-ordinately observed in cases presenting this change in the blood. Among the most striking consequences of exhaustion of vital power, as thus manifested in the extreme vessels and blood, are, discolouration of the skin, and passive hæmorrhages from mucous surfaces—phenomena characterising the last stage of the most unfavourable cases of the intense disease. The gastric disturbance in the early stages generally proceeds from excited vascular action, and from the passage of irritating secretions into the stomach, in connection with an increased susceptibility and irritability of the organ. In the latter stages, it more especially results from the morbid secretions poured into the stomach, and the irritated or inflamed state of its villous surface.

375. The source of the black matter passed from the stomach and bowels in the last stage of this and of other severe fevers of warm countries, has been variously stated. Some consider the black colour to proceed from the exudation of dark blood, which, in mixing with the secretions of the stomach, liver, and bowels, imparts to them a still darker tint. Some ascribe it chiefly to the bile, and secretions from the digestive mucous follicles, which are often both very dark and thick, in the last stage of the more malignant kinds of intertropical fevers; and others believe it to arise both ways. There is no doubt that all the secretions poured into the digestive canal are more or less diseased, particularly in the latter stages: but it is as clear, that the black colour mainly depends upon the state of the blood; and that all the matter ejected upwards and downwards, presenting this appearance, does not consist of altered secretions merely,—a great part of it probably being an exudation of blood from the mucous surface. I believe, also, that these matters vary very remarkably in the ardent climate fever, in the more malignant forms

of marsh or endemic fevers, and in the pestilential yellow fever — the diseases thus characterised. Dr. JACKSON remarks that the secretions from the digestive mucous surface are ropy and clear during the early periods, and are brown or black in the latter — sometimes black as soot; and that the sooty or ink-like colour is chiefly observed where the head and stomach are simultaneously attacked. When we consider that the blood becomes darker than natural, as well as otherwise changed, early in the period of exhaustion, and that the liver and mucous follicles of the digestive canal, with the kidneys, are the principal organs of depuration, or channels by which the elements producing these changes are eliminated from the circulation, we need not be surprised at the secretions, which these elements go to form, and which these organs excrete, presenting somewhat similar characters. It must however be admitted, that the share which the secretions perform in producing this phenomenon, or that which the exudation of blood has in giving rise to it, will vary much in different varieties or cases of intertropical fevers. — The rapidity with which a dissolution of the tissues takes place after death, in the severe forms of climate fever, deserves notice, as marking the rapidity of vital exhaustion, and as resulting from the changes of the blood; these changes commencing with the stage of exhaustion, and advancing until this fluid is no longer capable of influencing the nervous system, and of preserving the irritability of contractile parts — or until it poisons, instead of exciting, the sensitive and moving tissues.

376. *iii. TREATMENT.* — The means that should be employed in the *mild* and *severe* forms of inflammatory fever are the same — the only difference being in the promptitude and energy with which they ought to be administered. In the mild diseases, particularly in cold or temperate climates, the febrile excitement is much more prolonged than in the severe, which rapidly exhausts itself by its violence. The necessity, therefore, of restraining it at its commencement is great in proportion to its activity. In the milder forms, vascular excitement may continue several days, and depletions may be practised with advantage as long as this state persists; but, in the severe, the period in which they can be employed with benefit passes away sometimes in a few hours; and continues seldom beyond the third, and rarely beyond the fourth day. As in the state of excitement, so in that of exhaustion, the treatment is the same in all the varieties of this fever — the only difference being in the choice of means, in the activity with which they should be employed, and in the appropriation of them to the varying circumstances of the case.

377. *A.—a. During excitement*, and especially at its commencement, vascular depletions should be practised, and carried as far as the state of the pulse and other circumstances will permit; and in the manner described in the article BLOOD (§ 64.). The observations already made on this subject (§ 128—138.) will guide the inexperienced practitioner; but it should not be overlooked, that, in the intense climate fever, vascular depletion should be prompt, from a large orifice, large, and repeated, to be successful; and that the quantity of blood abstracted should depend chiefly upon the effect produced. Dr. JACKSON justly remarks that it should be taken in quantity

sufficient — whatever may be the amount — to relax the surface, and set free the secretions. Less than three pounds is rarely sufficient to produce this effect; and six have not been more than sufficient on some occasions: but whatever the amount may be, it will do comparatively little good if we stop short of the quantity which is requisite to effect a decided change. If delayed until the excitement is about to terminate in exhaustion, no benefit — or even mischief — may result from it; for the tonic of the vascular system will have then become too far weakened to admit of the vessels accommodating themselves to a considerable loss of blood. When, therefore, the symptoms indicating the passage of excitement into collapse, or the deceptive abatement of the febrile action indicating this state, is observed — and particularly if yellowish blotches appear about the mouth, face, or breast — the time for bleeding with advantage has passed. If, however, headach is still urgent, the pulse still strong, and the features have not collapsed, blood may yet be abstracted cautiously and in moderation. When the cerebral affection is considerable or persistent, and is unattended by marked symptoms of exhaustion, depletion, general or local, may be repeated. Where the headach is particularly intense — rending, throbbing, &c. — with hot inflamed eyes, one bloodletting, however large or early, will seldom be sufficient. In such cases, the body should be immersed in a tepid, or slightly warm, bath, and well scrubbed with brushes, &c., until the cutaneous circulation is rendered free. Cold should also be applied to the head, both during the bath and subsequently, the hair having been cut off. After the patient is removed to bed, the vascular action and headach will often become again excessive; and, although a very few hours only may have elapsed, will require the repetition of very large depletions. Spontaneous hæmorrhage during excitement should not be arrested. In the most severe cases, especially when determination to the brain is great, epistaxis often occurs, but is generally slight, or almost instantly disappears. In these, vascular depletions, aided by the other means appropriate to this state, ought to be most energetically practised; for nothing else will save from fatal changes taking place within the brain, or from as fatal exhaustion, and its effects.

378. *Purgatives*, in one form or other, are a material part of the subsequent means. *Calomel* with *jalap* and *James's powder* may be given, in the form of pill, from time to time; and, after a few doses have been taken, a cathartic enema should be administered, and repeated. As to the choice of the enema, the practitioner should be guided by the progress the disease has made. At an early period, *sea water*, with or without the addition of castor oil, or of extract of colocynth, is appropriate: subsequently, olive oil and oil of turpentine may be substituted for the latter. — *Emetics* are not suited to any state of this fever; although they are often serviceable in fevers which have been confounded with it, more especially at the commencement of the various forms of marsh fever.

379. *b. Refrigerants*, when judiciously exhibited, are valuable adjuncts in the period of excitement. Those already enumerated, both *internal* and *external* (§ 139—141.), should be perseveringly em-

ployed. Of these, the *nitrate of potash*, the *nitrate of soda*, and *muriate of ammonia*, and injections of *cold sea water*, as recommended by Mr. DICKENSON, are most deserving of notice. HILLARY prescribed a scruple of nitre and twelve grains of muriate of ammonia three or four times a day, in water; and Dr. CONWELL has recently shown the propriety of the practice in his instructive work, and its applicability to other states of febrile action. In the more ardent climate fever, this medicine should be very frequently exhibited during excitement; cold applications to the head, and the cold affusion, being also assiduously employed. The refrigerants just mentioned may likewise be taken frequently in conjunction with the *liquor ammoniæ acetatis* and *spiritus ætheris nitrici*. After depletions, they will often prevent the distressing irritability of the stomach, which increases with the unfavourable progress of the disease, and allay it when present. Although this is the most violent form of fever which comes before the physician, yet it may be arrested at an early period with greater certainty than any other, by the decided employment of the foregoing measures.

380. *c. External derivatives*, and more particularly *blisters*, have been very much employed against the inflammatory forms of fever, with the view of allaying the irritability of the stomach, and protecting it and other viscera from impending injury. But I believe that they have been as often injurious as beneficial; and that, owing to a too early use of them, they have increased the general excitement, and not derived from internal parts. It is only after vascular action is subdued as low as may safely be attempted, by the foregoing treatment, that *blisters** should be

* The following case will show the progress of the disease, as well as its cerebral complication, in its most severe form; and the little effect which a depletory practice short of what it requires produces upon it.

A soldier of a full and gross habit of body, aged 28, just arrived in the West Indies, during the hot and dry season, was attacked, at six o'clock in the morning, with giddiness, severe headach, and pain in the back and limbs. He came under treatment at six in the evening (twelve hours after the attack), and then these symptoms were violent; the face was flushed, the eyes heavy and injected; the breathing was laboured; the pulse frequent, sharp, and contracted; the heat great, and skin dry; thirst vehement; tongue white and foul. He was anxious, restless, and complained of oppression at the præcordia. He was bled to thirty two ounces: a purging bolus was given immediately, repeated in four hours, and accelerated by an enema. He seemed a little faint from the bleeding, and expressed ease, but no decided relief. He passed the following night in much distress.

Second day of disease, in the morning, he complained of anxiety and uneasiness at the præcordia; sighed frequently, and breathed with catching and difficulty at times. Pulse quick, hard, and strong; the skin very hot and dry; intense pain in the head and loins. Bowels not freely opened by the purgatives. Was bled to fourteen ounces: the skin became moist; the pains remitted, but did not cease. Blisters to the head and epigastrium; calomel and James's powder every third hour; inunction with mercurial ointment; saline diaphoretics. He sweated copiously in the afternoon, had some evacuations by stool, and seemed relieved.

Third day.—Anxiety and sense of burning at the præcordia; nausea and vomiting; ineffective motions downwards; skin dry; pulse strong, not frequent; thirst urgent; eye and countenance lurid; temper irritable and impatient; alarmed at his situation; complains of the blisters on his head, which give sensations of burning. The skin is dry, and the heat rather above natural. The tongue is somewhat rough and foul.

Fourth day.—Symptoms more unfavourable. He vomits occasionally, and his nose bled in the act of vomiting: anxious, restless, and very uneasy. Pulse regular, full, and strong; ideas confused; countenance irregularly tinged yellow.

employed in this disease; but they ought never to be applied on the head, unless in the stage of exhaustion, when coma or lethargy is present, and the pulse becomes weak and intermittent. The exhibition of *mercurials* with the view of inducing salivation should not be attempted in this fever; for this effect has never been produced unless in the milder cases, which would have recovered nevertheless.

381. *B. The period of exhaustion* presents comparatively few chances of recovery, especially when far advanced, and in severe cases; but these few should not be thrown away, either by a temporising or a trifling practice; or by the use of means already known to be unavailing. There can be no doubt, that the change commencing in the blood with the accession of this stage is one of the chief pathological states which should attract the attention of the practitioner; but the exact nature of that change has not been satisfactorily demonstrated. That it partly consists of diminished crasis, or a weakened vital attrac-

Fifth day.—Somewhat delirious; extremely restless and anxious; eyes red and muddy; gums red and hot; no salivation; pulse regular, full, but not weak; skin dry and of a deep yellowish shade; the blistered surfaces dry and of a dark red approaching to a livid hue. He was washed with salt and water. Frequent small dark viscous evacuations.

Sixth day.—Delirious, with extreme restlessness; pulse soft, full, and slow; skin damp and clammy; heat moderate; vomits glutinous matter of a black colour; dark blotches in the skin; and a black sanies exudes from the nose and mouth.—He died in the afternoon, five days and twelve hours from the attack.

Dissection.—The vessels on the surface of the brain were remarkably turgid, giving a livid appearance to several places. Considerable effusion of lymph, and adhesions between the membranes had taken place, particularly near the falx. The stomach and intestines contained a large quantity of black matter. In the latter, it was thick as tar, and viscous as birdlime. The gall-bladder was half full of black bile.

Remarks.—The above case was not treated by the author. Twelve hours were lost before the patient received assistance. On the second day the bleeding was insufficient, and should have been carried further and repeated. The pulse evinced the necessity of it. In this disease, as in many others, the pulse may be safely followed. If the pulse become an unsafe guide, the fault is most generally that of the observer, who cannot interpret it aright. The application of two blisters at this time, before vascular action was sufficiently reduced, and more especially the application of one of them to the head, during predominant action in this quarter, was sealing the fate of the patient,—the bleeding in the first instance being just sufficient to give freedom to the circulation, but not adequate to reduce it; the blister adding fuel to the fire when it was about reaching its height. The inunction of mercurial ointment with the view of affecting the system was as fruitless, and just as rational, as respects this fever, as to attempt to extinguish a conflagration by a surgeon's syringe. On the *third day*, the great strength of pulse, and burning sensations in the head and præcordia, clearly indicated that large bloodlettings could alone have saved the patient, although late in the disease. The local complication, having prevented the sudden accession of this stage, and prolonged vascular excitement, admitted of a later recourse to depletions than in other circumstances. Even on the *fourth day*, owing to the cerebral complication, the pulse retained its strength, and, with all the other symptoms, evinced that bleeding should even then have been practised. After the first day, nothing appropriate was done; but much to aggravate the disease. As to the *dissection*, the usual routine only was gone through, and which, if pursued in a million of cases, would not advance our knowledge of the disease one step. The symptoms on the second and third days ought to have suggested a minute examination of the vascular system and blood; but these, as well as the digestive mucous surface, were unexplored. In this case, as in many others, the name of the disease, contradictory opinions as to its nature and origin, and empirical reports of successful methods of cure, mistified the practitioner, and paralysed the treatment, when he ought to have been guided by a knowledge of morbid actions, and of rational means of removing them.

tion between the globules of the blood, and consequently of a defective power of coagulating, and of altered colour, has been shown by TOWNE, and by every writer since his time, and is generally admitted: but the observations of Dr. STEVENS, as to the progressive loss of saline ingredients, which the blood undergoes with the progress of exhaustion, although now published several years, have not received that confirmation, for which there have been sufficient time and opportunity. They are not, however, therefore, altogether to be thrown aside, more especially as my experience has furnished me with facts calculated to support them in some measure. The exhaustion in this disease arises, — 1st, from the previous excitement; and, 2dly, from the changes induced in the blood in the course of this stage, especially at its acme, manifestly depressing the organic nervous influence, the tonicity of the vascular system, and the action of the heart itself, to an extent often incompatible with the continuance of life. It is in this manner that death generally takes place in the intense climate fever; for, however considerable the lesion which the early excitement may have occasioned in the brain, or digestive organs, death is seldom the result of it in either of those parts. It should, moreover, be recollected that the disease cannot be cured by bloodletting alone, however necessary it may be to the subduing of excitement in the early stage; for although this state may be lowered by it, still dangerous exhaustion may nevertheless supervene with the characteristic changes of the blood, and all the consequent phenomena described by the earlier writers on this fever, particularly by TOWNE, WARREN, HUME, LINING, HILLARY, &c.

382. *a.* From these considerations it is manifest that the *intentions of cure*, in this stage of the disease, should be — 1st, to support or rally the manifestations of life in the different organs — to oppose the progressive vital exhaustion; 2dly, to counteract those changes which take place in the blood and vascular system. These indications should be simultaneously carried into effect; for the alterations in the state of vascular action and tone, as well as in the constitution of the blood, are more or less dependent upon the change in the organic nervous influence. — At the commencement of this period, and when vascular action still continues high in the encephalon or digestive mucous surface, a moderate local depletion may precede measures calculated to fulfil these intentions: but even this form of depletion can seldom be carried far; for the tonicity of the vascular system generally, and especially of the capillaries supplying the mucous surfaces, is too far exhausted to admit of that accommodation of the vessels to a considerable diminution of their contents which is so requisite to the restoration of a healthy state of circulation. The characteristic phenomena of the last stage — the hæmorrhages and discoloured blotches — are manifestly owing as much to the exhaustion of organic nervous influence and of irritability, as to the attendant changes in the blood. It is to these latter changes almost solely that Dr. STEVENS directs his means of cure in this stage; but it is evident that the vital conditions on which they depend should receive equal attention. He states that the quantity of the muriate of soda is greatly diminished in the

last stage of this and other malignant diseases; and that, in order to supply the deficiency, he at first gave a strong solution of this salt with nitrate of potash. He subsequently found that the chlorate of potash and other active saline agents answer the purpose equally well, especially those which do not irritate the stomach; and he now seems to prefer a combination of the muriate and carbonate of soda and chlorate of potash. The basis of this pathology and treatment is the relation subsisting between the colour of the blood and the saline matters contained in it. The power of certain salts, particularly the muriate of soda, the nitrate of potash, the tartrate of potash, &c., as well as of the alkaline carbonates, to render the venous blood florid, and to affect its fluidity and coagulating powers, was long since fully demonstrated by VERHEYEN (vol. ii. p. 29.), SCHWENKE (*Hamatologia*, p. 190. *et passim*), HALES (*Hamastat.* p. 154.), ELLER (*Mém. de l'Acad. des Sc. de Berlin*, t. vii. p. 13.), BOERHAAVE (*Elementa Chymie*, t. ii. p. 378.), PETIT (*Lettre Seconde*, p. 34.), HALLER (*Elementa Physiol.* t. ii. p. 74.), SAUVAGES (*Sur l'Effet des Médicaments*, p. 37.), and others. A combination of the *nitrate of potash* and of the *muriate of ammonia* was always employed by HILLARY in this disease, and is applicable to every period of it. *Sea water* has long been a popular remedy for it and other West Indian fevers, and is very strongly recommended by AREJULA and Mr. N. DICKENSON as an enema. Dr. CHISHOLM employed, in 1798, the *chlorate of potash*, and remarked its effects upon the blood; but, as Dr. STEVENS justly states, he exhibited other substances calculated to counteract its influence on the disease. But granting that the colour of the blood is changed to its healthy state by these salts, it does not follow either that they shall be absorbed into the circulation during the advanced stage of this fever, or that they shall have the effect of rallying the exhausted powers of life. As to both these circumstances, the sanguine expectations of Dr. STEVENS require confirmation. There can be no doubt that, to be serviceable, these medicines should be given sufficiently early in the exhaustion to allow time for their absorption; and that substances which irritate the digestive mucous surface, and prevent or delay absorption, should not also be exhibited. In the present state of our knowledge, and judging from some experience of the effects of these salts in the advanced stages of other severe fevers, I infer, that they ought not to be confided in alone, but should be conjoined with such other means as are calculated to rally or support the vital manifestations, and promote the excreting functions — always recollecting that, in order to preserve the blood in a state suitable to the continuance of life, the depurative actions of the various emunctories require to be promoted.

383. *b.* In the early stage of exhaustion, HILLARY's saline mixture may be prescribed; or the same salts — the *nitrate of potash* and *muriate of ammonia* — may be given in camphor julap; the quantity of camphor being regulated according to the grade of depression. The *chlorate of potash* may likewise be given in the same vehicle; or the *citrate* or *tartrate of potash* or *soda*, with an excess of the alkali. It is very important, to avoid such means as will increase the irritability of stomach characterising this stage of the disease;

and I believe that these medicines are much less likely to have this effect than almost any other. A full dose of *calomel* will often have the effect of allaying for a while the irritable state of this viscus; but, when exhaustion is very considerable, its sedative influence on the organic nervous energy will be injurious, if it be not combined with camphor or ammonia. During the course of this stage, little benefit will accrue from such purgatives as irritate the stomach. An occasional Seidlitz powder, or the saline medicines just mentioned, assisted by frequent injections of sea or salt water, with the addition of an ounce or two of sweet oil, will prove much more serviceable than more active means, which will only increase the inflammatory irritation of the digestive mucous surface, and exhaust its vitality. Dr. JACKSON most frequently prescribed a combination of calomel, James's powder, nitre, sulphur, and soda, in the form of bolus, which was given every fourth hour; and afterwards the infusion of senna, with liquor ammoniæ acetatis, so as sufficiently to promote the action of the bowels.

384. c. In a further advanced state, and more especially if the pulse become irregular or intermittent, the more energetic restorative and nerve medicines should be prescribed, variously combined with one another, or with the saline substances just mentioned. Warm or rubefacient epithems, or sinapisms, should be also applied over the epigastrium, or to the lower extremities; and hot wine with spices; or champagne; or large doses of camphor with nitrate or chlorate of potash; or brandy and water, as the vehicle of effervescing salts; or half-drachm doses of turpentine, every two hours, in milk, or in spruce or ginger beer, may be resorted to, according to circumstances. But, before the exhaustion has proceeded thus far, these remedies, in more moderate doses; the preparations of ammonia, conjoined with saline or other medicines, the warm bath, &c.; may be employed, with a cautious observation of their effects.—Upon the whole, the principles developed above, in respect of the treatment of exhaustion of vital power in fever (§ 143—148.) should be adhered to.

385. d. During the progress of the stage of exhaustion, much attention ought to be directed to the beverage of the patient. Spruce beer, soda water, Seltzer water, bottled porter, bottled small beer, may be allowed, but only in small quantity at a time, as a considerable draught is generally followed by vomiting. These beverages may, moreover, be made the vehicle for the exhibition of refrigerant, antacid, or saline medicines, as the nitrate of potash, the alkaline subcarbonates, &c. During *convalescence*, the diet should be carefully regulated, and confined at first to farinaceous articles, in moderate quantity.

386. C. The modified form of *inflammatory continued fever*, arising from the concurrence of terrestrial exhalations, with climatorial influence, must be treated, in the periods of excitement and of exhaustion, conformably with the views explained above. This form of fever, after the inflammatory excitement is subdued by copious depletions, sometimes assumes a remittent character. In this case, the exhibition of bark or the sulphate of quinine during the remissions will be necessary. Whatever *complication*, also, which may either characterise this fever from its com-

mencement, or appear in its course, must be treated by depletions, local especially, and derivatives, according to the principles already advocated.—(See BILIO-GASTRIC FEVER.)

BIBLIOG. AND REFER.—*Hippocrates*, *Επιδημιων*, *passim*; *Περί νόσων*, vol. iii. p. 489.—*Aretæus*, *Acut.* l. ii. c. 4.—*Aëtius*, *Tetrab.* ii. serm. i. c. 78.—*Paulus Ægineta*, l. ii. c. 28.—*Oribasius*, *Synops.* l. vi. c. 18, 19.—*Avicenna*, *Canon.* l. iv. fen. i. tr. 2. c. 41.—*Sennertus*, *De Febribus*, l. ii. c. 12.—*Zacutus Lusitanus*, *De Med. Præst. Hist.* l. iv. hist. 10—14.—*R. Morton*, *Exerc. de Febribus Inflammatoriis.* Lond. 8vo. 1694.—*Bartholinus*, *De Usu Nivis Medico*, c. 13. 23.—*F. Hoffmann*, *Opera*, vol. ii. p. 118.—*R. Towne*, *On the Diseases of the West Indies*, 8vo. 1726.—*A. Piquer*, *Tratado de las Calenturas*, &c. Valen. 8vo. 1751.—*Lining*, *Edin. Essays and Observat.* vol. ii. p. 404.—*W. Hillary*, *On the Dis. of Barbadoes; and on Putrid Bilious Fever*, &c. 8vo. Lond. 1765.—*Stoll*, *Rat. Med.* ii. p. 217.; iii. p. 97. 639.; iv. p. 61. (*Remarks the putrid characters it assumes in the last stage.*)—*Rollo*, *Observ. on Dis. of Army of St. Lucia*, 8vo. Lond. 1781.—*B. Moseley*, *Treat. on Tropical Diseases, on the Climate of the West Indies*, &c. 8vo. Lond. 1784.—*Reil*, *Memor. Clin. fasc.* iv. p. 179.; et *De Febre Inflammatoria Simplici.* Hal. 1794.—*J. P. Frank*, *De Curand. Hom. Morbis*, 8vo. vol. i. Cl. i. Ord. ii. Gen. iii.—*J. Frank*, *Prax. Med. &c.* vol. i. p. 278.—*W. Lemprière*, *On Dis. of the Army in Jamaica*, 2 vols. 8vo. Lond. 1799. *passim*.—*Navières*, *Sur une Epidémie de Fièvre Inflamm.* 4to. Paris, 1804.—*A. Vilaseca*, *Noticia de la Calentura America.* Palma, 8vo. 1811.—*P. Pinel*, *Nosographie Philosoph.* &c. vol. i. p. 20. 6th edit.—*Tonnet*, *Essai sur la Fièvre Inflamm. ou Angioténique*, 8vo. Paris, 1823.—*J. Brunton*, *De Febri Minoræ*, &c. Ed. 8vo. 1815.—*J. S. Down*, *De Febre Inflamm. Biliosa*, 8vo. Ed. 1815.—*L. Spalding*, *Reflex. on Fever, particularly its Inflammatory Character.* New York, 8vo. 1817.—*N. Dickenson*, *Observat. on the Inflammatory Endemic incidental to Strangers in the West Indies*, 8vo. Lond. 1829. (*Has made a judicious discrimination between this fever and the epidemic infectious yellow fever.*)—*R. Jackson*, *The Hist. and Cure of Feb. Dis. as they appear in the West Indies among Soldiers*, &c. 2 vols. 8vo. Lond. 1820, *passim*.—*Fournier et Vaidy*, *Dict. des Sc. Méd.* t. xv. p. 248.—*J. Allan*, *On Ardent Fever*, *Edin. Med. and Surg. Journ.* vol. xi. p. 318.—*Macmillan*, in *Ibid.* vol. x. p. 30.—*Parson and Wilson*, in *Ibid.* vol. viii. p. 385—403.—*P. Comrie*, *On Ardent Fever*, *Ibid.* vol. xiii. p. 165.—*Boyd, Dickson, and M'Arthur*, in *Johnson*, *On the Influence of Tropical Climates on European Constitutions*, 8vo. 4th edit. 1827.—*Hildenbrand*, *Institut. Med. Pract.* vol. ii. p. 190.—*M. Good*, *Study of Med.*, by *Cooper*. vol. ii. p. 222. 3d edit.—*Boisseau*, *Pyrétologie*, &c. p. 73.—*J. Wilson*, *Memoirs of West Indian Fevers*, 8vo. Lond. 1827.—*Richter*, *Die Specielle Therapie*, t. i. p. 117.—*J. Boyle*, *On the Topography and Diseases of Western Africa*, 8vo. Lond. 1834, p. 71. *et seq.*

XVIII. BILIO-GASTRIC FEVER.—*SYN.* *Febris Biliosa*, Hippocrates, Stahl, Selle, Finke, Tissot, and Stoll; *Synochus Biliosa*, Galen; *Febris Gastrica*, Baillou, Lentin; *F. Gastro-Hepatica*, Hildenbrand; *Febris Cholericæ*, Auct. var.; *Fièvre Meningo-gastrique*, Pinel; *Gastrische Fieber*, Richter; *Gastric Fever*, *Gastro-bilious Fever*, *Bilious Fever*, *Bilious Continued Fever*, *Endemic Fever*, *Gastric Inflammatory or Bilio-Inflammatory Fever*.

387. DEFIN.—*Vascular reaction following chills or rigors and other symptoms of premonition and invasion, with predominant affection of the biliary functions, and of the digestive mucous surface, frequently with yellowness of the skin, in the severer cases.*

388. This fever is either sporadic, endemic, or epidemic.—It is *endemic* in warm countries and marshy situations among Europeans, particularly those who have not been long resident in these parts; and in marshy localities in the summer and autumn, in temperate climates.—It is *epidemic* in some seasons, particularly in autumn when the summer has been hot, after a wet spring, or after great falls of rain, or after inundations, and when great numbers of predisposed persons, especially from high latitudes, visit such localities. In these circumstances and persons, it proves the

seasoning fever. It is observed chiefly in adults of the bilious or bilio-sanguine temperaments, and in persons addicted to spirituous liquors. It is a very prevalent fever in the countries bordering on the Mediterranean, in the East Indies, and in America, and consequently in fleets and armies in these parts.

389. *Gastro-bilious fever* is caused chiefly by exhalations from the soil, or from vegetable and animal matter undergoing decomposition, in connection with atmospheric heat; by exposure to the sun; by the night airs or dews, and the influence of cold following such exposures or excessive exertion or high ranges of temperature; by intemperance and errors of diet or of regimen; by excesses in vinous or spirituous liquors; by great exertions following inactivity; by over-eating, or by a sudden transition from a very poor to a very full or rich diet, as in the case of soldiers and recruits; by anger and other mental emotions; and by the causes already enumerated (§ 330. *b.*)—It most frequently, however, arises from the concurrence of two or more of these causes. The influence of infection in producing it has been doubted; but the experience of Drs. DENMARK and BOYD, in ships and hospitals in the Mediterranean, has demonstrated its occasional origin in the cause—or at least the power infection evinces in producing a severe modification of it.

390. *i.* DESCRIPTION.—This fever, in robust and plethoric persons, approaches severe inflammatory fever on the one hand, and the more inflammatory forms of remittent on the other: or it presents a predominance of the characters of either, according to the intensity of the causes and the peculiar circumstances of the affected. The chief difference between inflammatory fever and it, depends upon the causes whence they respectively proceed; the former arising principally from atmospheric vicissitudes and climatorial influence, in connection with suppressed perspiration; the latter chiefly from marsh and vegeto-animal miasms (see *Diagnosis*). Its similarity to, and connection with, remittents, are referrible to the origin of both in the same causes; the only differences between them resulting from the intensity and concurrence of the causes, and from individual predisposition—being differences chiefly of grade and of type, as shown by Dr. BOYD, and confirmed by my own observation. That it should therefore be confounded with these fevers, cannot be a matter of surprise, and is of little importance as respects the treatment. But when it is mistaken for the synochoid and adynamic species with predominant affection of the digestive mucous surface, then the results may be serious.

391. *Gastro-bilious fever* is generally preceded by lassitude, nausea or want of appetite; by dull pains in the back and limbs; and by flatulence and indigestion. The breath is foetid; the tongue is covered by a yellowish mucous coating; the mouth is clammy, and the taste perverted; the bowels are costive, or relaxed, or irregular; and the countenance is pale or somewhat sunk. This state—the *premonitory stage*—may continue several days, the patient not being confined to bed; but generally in the morning he is seized with chills or rigors, preceded by a sensation of cold creeping along the spine. To these soon succeed severe frontal headach, vertigo, nausea, vomiting, burning heat of skin, restlessness, watchful-

ness, slight anxiety at the præcordia, pain and oppression in the epigastrium, and in one or both hypochondria, with more or less soreness, fulness, and tenderness. The eyes are moist and injected, the conjunctiva often yellowish; the face is flushed; the breathing oppressed and accelerated; the pulse full, large, quick, and strong, rarely hard; the tongue is clammy, moist, furred, and yellowish, with a bitter taste in the mouth; the thirst is urgent, the breath foetid; the bowels are obstinately costive, or loose; the stools bilious, and the urine scanty and dark. When the stomach and bowels are inordinately affected, cerebral congestion very frequently supervenes at a later period. As the disease advances, the pulse feels less full, and is weaker than in health. The thirst and anxiety are increased; and the upper parts of the body are sometimes covered by a profuse sweat, whilst the skin still continues hot.

392. If the attack be very severe, or neglected at the commencement of reaction, the pain of the head is aggravated; and a disinclination to answer questions, stupor, and insensibility appear about the second or third day. The eyes are turgid or inflamed; a bilious yellow tinge spreads from the face downwards over the body; the tongue is covered by a thick yellow crust, is red at its sides, and dry and brown in the centre; the strength is diminished; nausea with bilious vomiting is often distressing; the pulse becomes weaker and quicker; and the patient has an insatiable thirst, and desire of cold acidulated fluids. The urine is very high coloured, voided often, and produces scalding in passing it. The bowels are either costive or loose.

393. If the disease has not been mitigated, a slight remission occurs on the third, fourth, or fifth day, generally in the morning; the face and chest being covered by perspiration, and the temperature of the surface reduced. But the symptoms are exasperated towards evening; the tongue becoming drier and darker; the epigastrium and hypochondria more painful, tender, and often also tumid and tense; the pulse more rapid, constricted, or weak. The anxiety at the præcordia is now changed into severe pain, aggravated on pressure, with oppression and frequent sighing; the countenance is sunk; there is vomiting of putrid or offensive bile; the stools are liquid, greenish brown, foetid, slimy, and occasionally bloody or dysenteric; the skin is often deeply jaundiced, and emits a putrid bilious odour. The patient is now collected, but various adynamic and malignant symptoms appear from the fifth to the seventh or eighth day. These are—tremors of the extremities, and of the tongue when held out; startings of the tendons; pain about the pubes, with inability to pass the urine; vomiting of a dark, glairy matter; difficulty of swallowing; sometimes swelling and suppuration of the parotid glands; tympanitic distension of the abdomen; inexpressive, glassy eyes, dilated pupils; clammy sweats, difficult and anxious breathing, and black tongue. To these succeed delirium, coma, intermitting pulse, cold extremities, and death, sometimes with convulsions. Petechiæ, blotches, and passive discharges of blood from the nostrils, gums, fauces, &c., are but rarely observed.

394. *Modifications.*—All the above symptoms are not present in the same case, nor always run the same course. In the young, strong, plethoric,

and unseasoned, in the sanguine and intemperate, and in very hot and dry seasons, this disease approaches very closely to severe inflammatory fever (§ 359.) with predominant affection of the stomach and membranes of the brain, or of the digestive mucous surface generally. But in weak or elderly persons, and in colder climates and seasons, it is more mild, and approaches, or even runs into, some one of the varieties of remittent. Indeed, it may assume either *inflammatory* or *adynamic* characters, or present *complications* similar to those observed in that fever, from which it differs merely in type. When animal miasms and infection are associated with the other causes, as in crowded transports, ships of war, prisons, camps, &c., in warm climates, or in hot seasons, more or less adynamia or depression of vital power, with contamination of the circulating fluids, is evinced early in the disease—*malignant* and nervous symptoms predominating towards the close. In such cases, the premonitory and invading stages are very manifest: reaction is often low or imperfect, as in the more adynamic states of remittent, or rather in the malignant form of fever about to be noticed; and the type is perfectly continued. But when it arises chiefly from terrestrial exhalations, the circulating and secreted fluids are less vitiated, and it presents more of the remitting character. When these causes are very intense, and the predisposition great, the disease often assumes a very *concentrated* and *acute* form, runs its course rapidly, and often passes into the remitting type, or induces visceral disease. These violent states of bilio-gastric fever have been often met by Mr. BOYLE and myself in Africa, and by Dr. J. JOHNSON, ANNESLEY, and others in the East Indies. This fever thus may resemble, according to the nature of the causes—predisposing and exciting,—of the seasons, of the locality and climate, and of the epidemic constitution, either inflammatory, or remittent fever, or even malignant fever—may possess more or less of a gastric character in one case, of a bilious state in another, of an inflammatory condition in a third, of cerebral affection in a fourth, of an adynamic or malignant form in a fifth, or a predominance of any two or more of them. These modifications give rise to the appellations, gastric, bilious, yellow, gastro-bilious, gastro-inflammatory, bilious inflammatory, bilious continued, gastro-meningitic, &c., applied to it by modern writers, and cause it frequently to be confounded with the severe inflammatory fever on the one hand, and with pestilential yellow fever on the other.

395. ii. *Duration and Terminations*.—These depend upon various circumstances—chiefly upon the exciting causes and circumstances proper to the patient.—*a*. When judiciously treated at an early stage, a favourable change generally appears from the third to the seventh day, or even earlier.—*b*. But when the disease has been neglected, or aggravated by improper means, *death* may take place from the fifth to the eighth day, preceded by the unfavourable signs just enumerated (§ 393.). In these, the brain or its membranes, or the digestive mucous surface, or all of them, have suffered very considerably, and are more or less changed.—*c*. In some cases, and when it is occasioned by the concurrence of marsh exhalations with the other

causes enumerated above, more particularly in hot climates, or in temperate countries during warm summers and autumns, the inflammatory action extends to the mucous surface of the small intestines and large bowels, the disease terminating either in enteritis or acute dysentery. As in the remittent type, so in this, the state of the secretions, particularly the biliary, and the nature of the ingesta, concur with the exciting causes in developing these complications (§ 237.). *d*. The fever may also pass into *inflammation* or abscess of the liver. This is a frequent complication and termination of the bilio-gastric fever of the East Indies, and of some other inter-tropical countries. When abscess forms in the liver in these cases, dysenteric symptoms are often superadded.—*e*. When the disease has not been entirely arrested, but only mitigated by treatment, or when it has been mild at the commencement, and caused chiefly by terrestrial exhalations, the patient continuing subjected to their influence, it may pass into a *remittent*, or even an *intermittent* type. In such cases, enlargements of the spleen, of the liver, of the pancreas, and even of the mesenteric glands, may ultimately supervene.—*f*. *Relapses* are more frequent in this than in almost any other fever, and are caused chiefly by a too early recourse to a full or stimulating diet, by irregularities in food or drink, by incautious exposure to the night air or to cold, by vicissitudes of temperature or of season, and by terrestrial or vegetable miasms.—The lesions observed in fatal cases are altogether similar to those found in the more inflammatory and severe forms of remittent.

396. iii. *Diagnosis*.—*Bilio-gastric* fever nearly resembles—1st. *Inflammatory fever*, in its milder states;—2d. *Remittent fever*, in its severe forms; and, 3d. *Epidemic or pestilential yellow fever*.—*a*. From the *first*, it is distinguished by premonitory symptoms of considerable severity and continuance; by the marked chills and rigors characterising its invasion; by the early occurrence of nausea and bilious vomiting; by the less continued and violent state of vascular reaction; by the copious and early bilious evacuations and the bilious suffusion of the skin; and by the usually longer duration of the disease. In severe climate or inflammatory fever, on the other hand, the invasion is sudden, and vascular action more or less excited from the commencement—premonitory symptoms being hardly observed. Subsequently the blood undergoes a much more remarkable change than in gastric fever—the yellow and livid blotches appearing in the last stage, being very different from the bilious suffusion of this disease; and the hæmorrhage from the mucous surface, the black vomit, and dissolution of the fluids, &c., so frequent in the former, being neither so common nor so great in the latter. The pain in, and determination to, the head, is more severe in the first stage of inflammatory fever, and the disorder of the stomach much less than in gastro-bilious fever; but the affection of the stomach becomes more violent and unremitting at an advanced stage of the former, than of the latter.

397. *b*. *Gastro-bilious* fever is distinguished from *remittent fever* chiefly by its continued or imperfectly remitting course. In other re-

spects there is little difference between it and the severer forms (§ 230, 232.) of that disease, excepting that its severity is often greater, and its duration shorter. Indeed, this is but a variety of marsh fever, owing its continued and otherwise modified characters to high temperature and other concurrent circumstances.

398. As this fever varies from the ardent seasoning, to the distinctly remittent type, with the intensity and concurrence of the causes producing it; and as it may occur contemporaneously with the pure climate fever, and with the more inflammatory forms of remittent fever, as frequently observed in the West Indies and Mediterranean during the hot months, particularly among soldiers and sailors; so it is often difficult to distinguish between them. The chief circumstances, however, which will fix the attention of the practitioner, are—the manner of invasion; the distinctness, obscurity, or absence of remissions; the degree of excitement characterising the early period, especially as expressed upon the vascular system; the kind of excitement, particularly in respect of sthenic or asthenic action; and the state of the circulating fluid, and of the secretions and excretions.

399. *c.* From *epidemic or pestilential yellow fever*, this disease is distinguished—by passing into the periodic type in many instances, and by frequently leaving visceral disease behind it; by its attacking the same individual oftener than once, if he have intermediately undergone a change of locality or climate; by the more inflammatory or sthenic character of the period of excitement, and the much less remarkable change in the blood and soft solids from the commencement; by the headach being confined chiefly to the temples; by the yellowness appearing early, and first in the eyes, and being of bilious origin; by much less irritability of the stomach in the advanced stages; and by its longer duration—generally from five to fourteen days. In pestilential yellow fever, the yellowness of the skin is not frequent, and is of a pale lemon colour; the face has a putrid, bloated, or livid hue; its duration is from one to five days; it never passes into the periodic type, nor leaves visceral disease behind it; fatal cases always being attended by the black vomit at their close. Moreover, remittent, inflammatory, and bilious fevers are never infectious, unless under peculiarly favourable circumstances, when the latter may assume this character; but epidemic yellow fever is remarkably infectious; and, whilst these are generally benefited by vascular depletions during the period of excitement, the epidemic malady requires a different method of cure.

400. *iv.* The *Prognosis* depends upon the intensity and concurrence of the exciting causes; upon the severity of the attack; upon the treatment adopted at the commencement; upon the state of vascular reaction; and upon the complications that may arise.—*a.* It may be favourable, if the attack be mild or simple, the skin moist, the vomiting moderate, and the matters ejected consist chiefly of mucus or ingesta; if the tongue become moist, the bowels loose, and the stools bilious; if the nervous and vital powers be not much reduced; and if the yellow suffusion be slight or slow in its progress.—*b.* An *unfavourable* opinion should be formed, if any of the

more dangerous symptoms enumerated above supervene (§ 393.); especially if the skin be either early or deeply yellow, or the sensorial functions early disturbed; if the period of exhaustion be attended by deep redness of the face, dulness of the eyes, much anxiety, or laborious respiration; by a feeble, creeping, or intermitting pulse; by very scanty and dark urine; great pain, tension, or fulness in the epigastrium and hypochondria; difficulty of swallowing; tremors of the tongue or of the extremities; by startings of the tendons; involuntary discharges of fæces, particularly if they be of a black colour; incessant vomiting, especially if the egesta be dark, or great in proportion to the ingesta; by petechiæ, enlargements of the parotids, and coldness of the extremities.

401. *v.* *TREATMENT.*—The *indications* are—1st. To evacuate morbid secretions in the *prima via*, and restore the suppressed perspiration, in the stages of premonition and invasion;—2d. To moderate the vascular reaction attendant upon the period of excitement;—3d. To obviate determination to a vital organ, and mitigate urgent symptoms;—and, 4th. To support the vital powers in the consequent exhaustion.—The *first indication* is best fulfilled before reaction is developed. At this time an *emetic*, followed by diluents, by the *vapour bath*, or by warm fomentations, *sudorific drinks*, and by warm emollient enemata, will generally restore the suppressed perspiration, and moderate the consequent reaction.—*Bloodletting* is the next important means; but the utmost care should be taken not to resort to it before reaction has commenced, or when exhaustion is about to supervene. Dr. DENMARK has insisted upon this, and my experience fully confirms the propriety of the advice. I have seen this fever most remarkably exasperated, and almost fatal syncope occasioned, by the abstraction of even two or three ounces of blood during the stage of invasion, before vascular excitement was developed. When this pathological state has supervened, depletions should be energetically and early practised, but with due regard to the state of the pulse, and to the complications and other circumstances of the case; and they ought to be aided by cold applications to the head, and purgatives. A full dose (from 10 to 20 grains) of calomel may be given immediately upon the first bloodletting, and afterwards the tartrate or citrate of soda or of potash may be taken, at short intervals, in the state of effervescence, with an excess of the alkali.—As long as vascular excitement is energetic, antiphlogistic remedies should be employed, as recommended above; and, in addition to those now mentioned, there are none more deserving of adoption, than small and frequent doses of the nitrate of potash and muriate of ammonia. Cold affusions, and cold spongings of the surface, are also useful auxiliaries. When internal viscera are oppressed, and reaction is not free and open, the tepid bath, or tepid affusions, will be serviceable.

402. The *second indication* is to be fulfilled by local depletions, in the first instance, followed by rubefacients, blisters, and the other means detailed when treating of the remittent form of bilious fevers (see § 251, 252—258.).—The *exhaustion* in the latter period requires the same

treatment as already advised for this state in the severer forms of remittent and inflammatory fevers (see § 253. 256, 257.).

403. The *mercurial plan* of cure in this fever has been very strenuously insisted upon by CHISHOLM, DENMARK, J. JOHNSON, BOYLE, BOYD, and various other recent writers. They advise *calomel* to be given after copious vascular depletions, with the intention of affecting the system, and in various forms of combination—with James's powder or other antimonial preparations, in frequent doses, or in larger quantities with opium. And they direct the mercurial unguents to be used externally at the same time. I have prescribed mercurials with the same intention, to the utmost extent, and in all these forms, in the more concentrated varieties of this fever in hot climates; but I have not satisfied myself that they have been actually beneficial to the extent supposed, even in the cases which have recovered during or after their exhibition. I would, therefore, prefer to use it in the manner I have advised in the severer forms of remittent (§ 250. *et seq.*).

404. The propriety of having recourse to *emetics* in this fever has been much questioned by writers, and especially by those of the school of M. BROUSSAIS. They are, in my opinion, quite inadmissible after excitement has commenced. They should be given only in the premonitory and invading stages, as above stated (§ 401.), but unfortunately the disease seldom comes under treatment until these have been superseded by reaction; and they ought to be aided, in these periods, by the means mentioned (§ 401.) in connection with them. They are contra-indicated even thus early, if great pain be felt at the epigastrium, with distension and tenderness; and if full and free vomiting have already taken place.

405. The *saline treatment*, so remarkably extolled by Dr. STEVENS, in the latter stages of this and other severe fevers, does not appear to have been employed to an extent which will warrant an opinion as to its effects. And, although several years have elapsed since it was so strongly recommended by this writer, for these diseases, I cannot find that any additional evidence of its efficacy has been adduced. It surely becomes this physician to furnish further proofs of its success, and it is morally imperative upon practitioners in warm climates to give it a proper trial.—It is unnecessary to offer further remarks on the treatment of this species of fever, as the observations already made in respect of the management of remittent and inflammatory fever will in a great measure apply to it; and the more so, as the severe states of these diseases, as well as of this, although commencing differently and evincing certain modifications in their early course, generally present very similar features in their advanced stages, or when they assume dangerous complications, and pass into exhaustion of vital power.

BIBLIOG. AND REFER.—*Avicenna*, Canon. Liv. fen. i. tr. 2. c. 35.—*Bianchi*, Hist. Hepat. p. 131.—*J. Williams*, On Bilious Fevers. Lond. 1752.—*Tissot*, De Febribus Biliosis, 8vo. Laus. 1758.—*Van Swieten*, Const. Epid. &c. p. i.—*Lind*, On Diseases of Hot Climates, p. 19.—*Bellikon*, Von Gallenfebern. Augs. 1772.—*Stoll*, Rat. Med. t. i. et ii. *passim*; et De Cognoscend. et Curand. Feb. § 340—375.—*C. Blicke*, On the Bilious or Yellow Fever of Jamaica, 8vo. Lond. 1772.—*G. A. Benelli*, Dis-

corso Apologetico delle Febbre Biliose, 8vo. Bol. 1775.—*Budenoch*, in Med. Observat. and Inquiries, vol. iv. No. 12.—*L. L. Fincke*, De Morbis Biliosis, &c. 8vo. Mog. 1780.—*Appel*, De Phlebotomia, imprimis in Febribus Biliosis recta Administratione. Helmst. 1799.—*Dömling*, Morb. Gastricorum Acut. Pathologia. Wiceb. 1797.—*J. P. Frank*, De Curand. Homin. Morbis, vol. i. § 98.—*Cassan*, Mémoires de la Société Méd. d'Emulation, t. v. p. 39.—*J. B. Davidge*, On the Autumnal Endemic of Tropical Climates, vulgarly called the Yellow Fever. Balt. 8vo. 1798.—*Rush*, in Trans. of the Soc. of Philad. vol. ii.; and Ed. Med. Comment. vol. xi. p. 170.—*W. Rait*, in Ed. Med. Comment. vol. xiii. p. 313.—*R. Pearson*, Observ. on the Bilious Fevers of 1797-99. Lond. 1799.—*Rcil*, Memorab. Clin. fasc. iv. No. 8.—*Spalding*, in New York Med. Repos. vol. iii. art. 2.—*Joerdens*, in *Stark*, Archiv. b. ii. st. 2.—*White*, Of the Bilious Fever as it appeared at Bath. Lond. 1802.—*Pugnet*, Mém. sur les Fièvres de mauvais Caract. du Levant et des Antilles, &c. Lyon. 8vo. 1804.—*A. Boyle*, On the Endemic Continued Fever of Sicily, in Edin. Med. and Surg. Journ. vol. vi. p. 420., and vol. viii. p. 174.—*W. Irvine*, in *Ibid.* vol. vii. p. 333.—*Weinhold*, De Inflammatione Viscer. Hypochond. in Febribus Biliosis, § iv.—*D. A. G. Richter*, Die Specieller Therapie, &c. b. i. p. 283.—*J. Frank*, Praxeos Med. Universæ Præcepta, vol. i. p. 219.—*Denmark*, in Transact. of Medico-Chirurg. Soc. vol. vi. p. 30.—*G. A. Richter*, Darstel. des Wesens, der Erkenntniss u. Behandl. der Gastrischen Fieber. Berl. 1812.—*Tommasini*, Sulla Febbre gialla Americana, e sulle Malattie di Genio Analogo. 1801, 8vo.—*Fournier et Vaidy*, in Dict. des Sciences Médicales, t. xv. p. 274.—*Alibert*, Nosologie Naturelle, t. ii. gen. v.—*Raimann*, Handbuch der Speciellen Therapie, b. i. § 139.—*W. Boyd*, De Febre Minoræ, 8vo. Ed. 1817.—*Hildenbrand*, Institut. Medicæ Practicæ, vol. iv. p. 680.—*Meli*, Su le Febbrì Biliose. Milano, 1822; et Su la Condizione Patol. delle Febbrì Biliose. Mil. 1824.—*J. Johnson*, The Influence of Tropical Climates on European Constitutions, 4to. edit. *passim*.—*F. G. Boisseau*, Pyrétologie Physiologique, &c. 3d edit. p. 130.—*Schmidtman*, Observat. Med. t. iii. p. 356.—*J. Annesley and Author*, Researches into the Pathology and Treatment of the Dis. of India and of Warm Climates, &c. imp. 4to. vol. ii. *passim*.—*W. Stevens*, Observ. on the Healthy and Diseased Properties of the Blood, 8vo. Lond. 1832.—*W. Twining*, Clinical Illustrations of the Diseases of Bengal, &c. Calcutta, 1832, 8vo. *passim*.—*W. E. E. Conwell*, On the Funct. and Struct. Changes of the Liver, and on Hepatic Disease in India, &c. 8vo. Lond. 1835, *passim*. (See the REFERENCES TO REMITTENT AND INFLAMMATORY FEVERS, and likewise to PESTILENTIAL YELLOW FEVER, as this disease has been very frequently confounded with them, owing chiefly to the circumstance of *yellowness* of the skin being one of its chief characteristics; indeed, this symptom is more generally observed in it than in the other fevers just mentioned. The term *yellow fever* ought to be entirely discarded; as yellowness, being improperly viewed as a pathognomonic symptom of one kind of fever, all others, in which it is a contingent phenomenon, although not more frequently met with in one than in another, have been confounded with that fever. As respects *intermittents*, their periodicity and exacerbations sufficiently distinguish them, even although yellowness or signs of malignancy should arise in their advanced course. Besides, yellowness is a very indefinite symptom,—it not only is of various shades, but also arises from very different causes;—it is lurid or tawny in one case, brownish or mahogany-like in another, greenish in a third, orange-colour in a fourth, of a lemon tint in a fifth; and it is, moreover, either partially or generally diffused, or even mixed with different colours, as with greenish, livid, purplish, violet, or reddish blotches. And it may proceed either from the passage of the colouring parts of the bile into the circulation, or from incipient dissolution of the blood, with loss of the vital tone of the capillaries. When it arises from the former source, especial disorder of the biliary secretion is presupposed; in the latter, predominant affection of the circulating fluids and of the vascular system. It would be preferable, therefore, to adhere to the denominations *inflammatory*, *bilio-gastric*, and *pestilential*, as respects those species of fever which most frequently present the symptom in question as the result of these causes.

Those who have not seen the fevers incidental to inter-tropical countries, more especially to the West Indies, Africa, the Mediterranean, and the East, may consider the distinctions made above not to exist in nature, and that remittent, bilious continued, inflammatory, and pestilential fevers are merely modifications and grades of each other. They may even doubt the utility of the details into which I have entered, particularly as regards inflammatory and bilio-gastric fevers; for they will scarcely observe a case of either in temperate countries, particularly in the severe forms met with in warm climates, unless in very hot seasons, and in peculiar circumstances. But in those parts of the world to which I have

just referred, and in others adjoining them, to which medical men may proceed to serve, it will be found that the unacclimated, according to their constitutions, will be affected by inflammatory fevers of various grades of severity, in healthy localities and in hot and dry seasons—with bilio-gastric and remittent fevers, of various forms, in miasmal situations and sickly seasons,—whilst the acclimated shall escape the first of these maladies, in the former of these circumstances, and the second in the latter, or, if attacked, they shall experience only remittents or intermittents. The pestilential yellow fever makes no such distinctions. As already stated, and as will be hereafter shown, its spread is limited only by a low range of temperate, by a previous attack, and by circumstances that circumscribe its infection. Whilst the former fevers are met with in all warm climates, and occur either sporadically or endemically in them, and are not infectious, this last appears only on the intertropical shores of the Atlantic, or parts adjacent, during hot seasons, rages for a time, and then disappears. Thus, it occurs after long intervals, prevails sometimes for years, and then takes its departure, as will be shown in another place. When we consider the very different constitutions—original and acquired—of those who inhabit European colonies within the tropics,—when we review the appearances of the new-comer, of the old resident, of the creole, of the mulatto of various grades, and of the negro, and take into account the modes of living, the exposures, and the various other circumstances connected with each class, and further connect all these with variety of situation, season, and temperature,—we cannot be surprised at the very different forms which fever assumes among them.

XIX. MUCOUS OR PITUITOUS FEVER.—SYN.

Febris Mucosa, F. Mesenterica, Baglivi; *Morbis Mucosus*, Roederer and Wagler; *Febris Pituitosa*, Stoll; *Febbre glutinosa gastrica*, Sarcone; *Fièvre Adéno-méningée*, Pinel; *Fièvre Muqueuse*, Fr.; *Schleimfieber*, Germ.

406. CHARACT.—*Slight febrile reaction following chills, with mucous evacuations, and pains in the back and limbs, and often with slight remissions.*

407. i. Causes.—This variety approaches bilio-gastric fever on the one hand, and the enteric form of synochoid fever, on the other. It may occur either sporadically, endemically, or epidemically; and, in either case, it may arise from, or pass into, fever of a periodic type. It may even run into dysentery; and, from the severity of the pains in the limbs attending it, may closely resemble an attack of rheumatism. Its characters, both constant and contingent, result from the various circumstances, both intrinsic and extrinsic to the patient, concurring to cause it. These are chiefly—*a.* The epochs of childhood and old age; the female sex; the lymphatic, leucophlegmatic, and nervous temperaments; prolonged watchings; excessive fatigue or indolence; languid, weak, delicate, and pale states of frame; chlorosis, intestinal worms, or a cachectic habit of body; the debility caused by previous disease, as by agues, mesenteric obstructions, or by excessive venereal indulgences.—*b.* Living in low, humid, cold, and marshy places; privation of light and of the sun's rays; the autumnal season, or prolonged wet and cold weather; want of cleanliness; the use of indigestible vegetables, of unripe fruit, of tainted animal food, or of unwholesome fish, particularly shellfish; of stagnant, marshy, or impure water; the privation of accustomed stimuli; the abuse of emetics or of purgatives; insufficient nourishment, &c. The most common of these are cold and humidity, unhealthy localities, and unwholesome ingesta. This fever is *endemic* in the situations just specified; and it has occasionally appeared epidemically during autumn and winter, particularly after much wet

408. ii. Symptoms.—Some of the older writers

confounded mucous fever with *influenza*, with *coryzal fevers*, and even with *bronchitis*. But more recent observers have, with greater propriety, confined their description of it to that form of general affection, which is characterised by slight febrile excitement and nervous depression, with predominant disorder of the digestive mucous surface, of a sub-acute form, accompanied with mucous or slimy evacuations—admitting, however, the occasional complication of bronchial irritation with it.

409. This fever is *preceded* by general uneasiness, by a sense of heaviness; or pains in the limbs, loss of appetite, disturbed sleep, acid or acrid eructations, and cold or chilliness, which is first felt in the lower extremities. To these succeed, marked dislike of food, slight thirst, nausea, sometimes with vomiting of a whitish, transparent, and viscid fluid of a nidorous or acid taste; a sense of weight at the epigastrium, with fulness; flatulent and colicky pains, with slight tenderness in the abdomen, and relaxed bowels. The tongue is usually moist, white, and covered by a mucous coating, with a sickly or unpleasant taste of the mouth; aphthous exudations are occasionally observed on the fauces and lips; the saliva is sometimes abundant; and the breath is foetid and heavy. The evacuations are mucous, more frequent than natural, sometimes tinged with blood, voided with slight tenesmus, and, in children, often with *prolapsus ani*. In rarer instances, costiveness, or an irregular state of bowels is observed;—mucous diarrhoea and costiveness alternating; and, occasionally, worms are voided. The urine is either scanty or natural at first, of a citrine tint, and sometimes passed with pain; it deposits a mucous sediment of a greyish or brick-colour at an advanced stage. The temperature of the surface is not much increased, unless during the evening exacerbations; and, towards the acme and decline, a gentle perspiration breaks out, especially in the morning and during sleep. A slight eruption often occurs during the night, but generally disappears in the morning. The pulse is feeble and small, but seldom much accelerated, unless in the evening and night. The patient complains of a sense of weight or of pain in the sinciput and occiput; with vertigo upon sitting up; of confusion of ideas, and somnolency, without the ability to sleep; of depression, sadness, and restlessness; of pains and soreness in the hypochondria, in all the limbs, and in the joints; and occasionally of cough, noise in the ears, and deafness.

410. iii. The *Diagnosis* rests upon the circumstances connected with the origin of the disease; on the appearance of the evacuations; on the colicky pains in the bowels; on the softness, the very slight acceleration or slowness, of the pulse; on the little increase of the temperature, and the humidity of the skin; on the slight degree of thirst; and on the very moderate or sub-acute character of all the febrile phenomena. In its slighter forms, the complaint is commonly described as fever from cold, or as a cold in the bowels and limbs. In some cases, it presents either a dysenteric or a rheumatic character; and is with difficulty distinguished from dysentery, or from rheumatism in other instances, unless the history of the disease, and the state of the bowels and of the evacuations, be closely observed. It

may even pass into either of these affections, or into others about to be noticed.

411. iv. The *Duration* of this fever varies from two to five or six weeks. It often presents slight remissions, indicated chiefly by the pulse and skin. The more manifest the remissions, the longer is its duration, which may be extended even beyond the latter period.—*Relapses* are very common during convalescence; and are caused chiefly by errors of diet or of regimen, by premature exposure to atmospheric vicissitudes, or to cold and moisture, or to paludal exhalations. The relapse may assume either the same or aggravated features, or a purely remittent or intermittent type.

412. Mucous fever *terminates*—1st, In a return to health, which most commonly takes place; and is frequently preceded either by vomiting, or by a moderate diarrhoea, or by an aphthous eruption on the lips, or by a miliary eruption on the skin, by a general sweat, by the urine becoming copious and depositing a sediment, or by a spontaneous salivation;—2dly, In the adynamic state of fever, with predominant affection of the intestines, and of the brain, or of its membranes;—3dly, In a purely remittent or intermittent type, or in dysentery, particularly in marshy localities; and, in such cases, sub-acute or chronic disease of one or more of the viscera in the abdomen, with or without dropsy, may supervene;—4thly, In unequivocal symptoms of rheumatism, or of peripneumonia;—5thly, In death, after severe inflammatory affection of the intestinal mucous surface, attended by obstinate diarrhoea; or after excessive nervous exhaustion, or after obscure affection of the brain, or of its meninges, or of the respiratory organs.—The *prognosis* is generally favourable, unless any of the more severe changes just mentioned present themselves. This fever seldom terminates fatally when early and judiciously treated.

413. v. *On dissection*, the principal lesions are found—1st, In the *intestinal canal*, which is usually greatly distended by a foetid gas; its mucous surface presenting inflammatory appearances, consisting of vascular injection, thickening, softening, various alterations of colour, ulcerations, and even gangrene;—2dly, In the *peritoneal covering* of the intestines, which is either partially inflamed or altered in colour, the abdominal cavity sometimes containing serum;—3dly, In the *mesentery*, which often presents lesions similar to those of the peritoneum, the mesenteric glands being enlarged, inflamed, or changed in colour;—4thly, In the *liver* and *spleen*, which are variously altered in different cases, but most frequently congested, enlarged, or granulated; the spleen being generally softened, friable, enlarged—more rarely small and hard;—5thly, In the *lungs*, which are congested or injected, hepatized, tuberculated, the bronchi being loaded with mucus, and the bronchial glands enlarged;—6thly, In the *pericardium*, which sometimes contains a turbid or sanguinolent serum; the substance of the heart being flabby or soft.—Morbid appearances, consisting chiefly of congestion and effusion of serum between the membranes or in the ventricles, are occasionally observed in the brain. In every instance, the *digestive mucous follicles* have been found enlarged, inflamed in various degrees, and ulcerated; presenting the

various lesions, affecting these follicles, described in the article DIGESTIVE CANAL (§ 36.); the cæcum, large bowels, and small intestines, being the parts chiefly diseased.

414. vi. *Treatment*.—SELLE, STOLL, and J. P. FRANK, looked upon the character of the stools as the consequence of accumulations of mucus in the digestive canal, and have prescribed emetics and purgatives in order to evacuate them. BAGLIVI more judiciously directed vascular depletions, emollients, and mild purgatives. PINEL first evacuated the stomach by means of ipecacuanha; and either continued this substance afterwards, in weak aromatic infusions, or gave rhubarb with the tartrate of potash, or with the muriate of ammonia. He occasionally directed three or four grains of the extract of jalap in an emulsion, as recommended by ROEDERER and WAGLER. BROUSSAIS and his disciples, viewing this fever as a form of primary *gastro-enteritis* developed under the influence of cold, humidity, and bad diet, in persons whose mucous surfaces are predisposed to inordinate secretion, and who are liable to sympathetic affections of the limbs, head, &c., advise a treatment founded on these views. They believe that collections of mucus in the *prima via* are not the cause of the constitutional disturbance, but are, equally with such disturbance, produced by the inflammatory irritation of the mucous surface. There can be no doubt of the frequent origin of the morbid secretion in this state, but that it always, or solely, originates in it, is questionable. Although inflammation, or rather vascular injection, of the mucous membranes is one of the constituents of the morbid condition, there are obviously others which modify it, or give it a more or less specific character. Besides, the follicles are more affected than the mucous membranes themselves; and however prominent the affection of these parts may be, the organic nervous system is manifestly that which is primarily impressed by the causes, and which continues longest and most universally to evince disorder.

415. a. The *first* intention is to remove the exciting causes; and, if the disease comes under treatment sufficiently early, to endeavour to arrest its progress, or to shorten its duration, by the exhibition of an emetic of ipecacuanha, by the vapour bath, by hot fomentations, and by warm emollient injections.—b. The *second* indication is to reduce vascular action, if the disease be fully developed, or the patient plethoric or robust, and if febrile excitement be considerable, by general or local bloodletting, in moderate quantity, by refrigerants, by the tepid bath, and by low regimen.—c. The *third* intention is to determine the circulation to the surface, and derive from the mucous surfaces by means of DOVER's powder, or by ipecacuanha, nitre and opium, or other diaphoretics; by the warm bath; and by blisters, sinapisms, or warm terebinthinate epithems applied over the abdomen.—d. The *fourth* object is to soothe intestinal irritation and to correct the secretions, by emollients and demulcents given by the mouth or by injection; and by small doses of blue pill or hydragrym cum creta and camphor, with DOVER's powder.—e. The *fifth* is to evacuate morbid matters from the intestines, and to prevent their collection, by the occasional exhibition of mild purgatives and

laxative enemata.—*f. Sixthly*, to alleviate urgent symptoms, or determinations to particular organs—as to the head, the lungs, or liver—by local depletions, external derivatives, rubefacients, &c.—*g. And, seventhly*, to support the powers of life in the latter period by gentle tonics, light nourishment, and by cinchona or the sulphate of quinine, especially when the disease presents remissions, or is disposed to pass into the periodic type, or into rheumatism, and particularly in humid, marshy, and unwholesome situations. I have found the following aperient very serviceable in this form of fever, when the bowels required to be gently but freely evacuated. Others, however, in the APPENDIX (F. 266. 430. 827.), will equally useful.

No. 222. R. Potassæ Supertart. in pulv. ʒj.; Potassæ Nitrat. ʒij.; Confect. Sennæ ʒij.; Syrup. Aurantii ʒj. M. Fiat Electuarium, cujus capiat Coch. i. vel ij. minima.

BIBLIOG. AND REFER.—*Avicenna*, Canon. Liv. fen. i. tr. ii, c. 47. 55.—*J. Bockel*, Synopsi novi Morbi, quem Febr. Catarrh. vocant, &c. Helms. 1580.—*Crause*, De Febr. Catarrhalibus, 4to. Jen. 1676.—*C. Piso*, De Morbis ex Serosa Colluvie ortis, 4to. Lugd. Bat. 1714.—*Baglivi*, Prax. Medica, l. i. cap. 5.—*I. G. De Hahn*, Febr. Contin. quæ Ann. 1729, Uratislaviæ grassatæ sunt, 4to. Urat. 1731.—*Roederer et Wagler*, Tractat. de Morbo Mucoso, &c. Goet. 1762. 1783.—*Strack*, De Febre Pituitosa. Mog. 1781.—*Knaus*, Annot. quædam circa Morb. Bil. Mucosum Ann. 1783-4. Stuttg. grassat. &c. Stuttg. 1786.—*Wiebers*, Discrim. inter Febr. Bil. et Pituitosam, *Doering*, Tr. vol. i.—*Elsner*, Animadvers. in Febr. Pituitosas. Regiom. 1789.—*M. Stoll*, Ratio Med. vol. iii. p. 141.; et Aphor. de Cognoscend. et Curand. Febr. &c., edit. 2d, p. 137.—*Consrubach*, Hist. Febris Mucosæ Ann. 1783-4 Stuttgartiæ grassatæ, Stuttg. 1790.—*Jacob*, De Febre Pituitoso-nervosa, Stuttg. 1782 grass. 8vo. Stuttg. 1793.—*Stroem*, in Acta Reg. Soc. Med. Havn. vol. iv. p. 321.—*Selle*, Rudimenta Pyretologiæ, 3d edit. p. 262.—*Canz*, Beschreib. einer Schleimfieberepidemie. Tüb. 1795.—*Reil*, Memor. Clinic. fasc. i. p. 6.—*Py*, De la Fièvre Muqueuse, Journ. Gén. de Méd. t. xix. p. 229. 1805.—*Sarcone*, Hist. Raisonnée des Mal. Observ. à Naples, par *Bellay*. Lyon, 8vo. 1804.—*Pinel*, Nosog. Philosoph. t. i. p. 132.—*Hildenbrand*, Institut. Med. Pract. vol. iv. p. 741.—*Boisseau*, Traité des Fièvres, &c. p. 174.

XX. FEVER, SWEATING.—SYN. *Miliaris Sudatoria*, *Sudor Miliaris*, *Miliaria* (from *milium*, a millet seed), *Sudor*, *Sudor Anglicus*, *Sudor Picardius*, *Febris Sudatoria*, *F. Helodes Sudatoria*, *Sudatio Febris Helodes*, *F. Miliaris*, *F. Vesicularis*, *Purpura alba*, Auct. var.; *Miliaris*, Sauvages and Sagar; *Febris Purpurata*, F. Hoffmann; *La Svette*, *La Svette Miliare*, *La Svette Epidémique*, *Fièvre Miliare*, Pujol, Gastellier, Menière, &c.; *Der Friesel*, Germ.; *Miliary Fever*, *Sweating Miliaria*, *Sweating Sickness*.

416. DEFIN.—*After lassitude and general uneasiness, a sudden attack of febrile disorder, with most profuse and continued sweat, frequently followed by an eruption of miliary vesicles, the disease occurring epidemically and being infectious.*

417. I have preferred the name *sweating fever* to that of *miliary fever*, as sweating is the constant and characteristic phenomenon of the disease, and is present in the mild, as well as in the most malignant cases; whereas the miliary eruption is sometimes wanting in both. This malady should not be confounded with the febrile affections of lying-in women, attended by sudamina, that have improperly been denominated miliary fever, from the character of the eruption sometimes occurring as a symptom of them, during hot seasons and a too heating regimen. This is a specific fever, seldom observed in modern times, in this country, although frequently prevailing epidemically in many parts of Continental Europe.

418. i. *History*.—The epidemics which have been variously denominated, as stated in the *Synonymes*, have manifestly been modifications of the same disease, caused by the varying circumstances connected with its appearance.—The epidemic sweating sickness, which appeared between 1485 and 1528, and which ravaged England in these and several intermediate years, was evidently, as supposed by MM. OZANAM and RAYER, a most violent form of this malady, in which the sweat was the most prominent symptom, and the progress most rapid and acute. But many cases noticed by BOYER and others, in recent epidemics, were similarly characterised.—(a) The epidemics observed in France by RIVERIUS, during 1618; in Germany by WELSCH and LANGIUS, in 1652; in Francfort in 1653; in Augsburg in 1660; in Bavaria in 1666; in Holland by GRUNWAL, in 1666; in Hamburgh in 1675; in London and in Edinburgh, towards the end of the seventeenth century, by HAMILTON and SIBBALD; in Saxony in 1694; in Hungary in 1697; in Plymouth by HUXHAM, in 1738; in Normandy by LE PECQ-DE-LA-CLOTURE, in 1740; near Mantes by QUESNEY, in 1750; in Navarre by AUGUSTINIS, in 1755; in Bayeux from 1769 to 1776; in Piedmont by ALLIONI, in 1758, and by DAMILONIO in 1782; and in Toulouse and the vicinity by GALLET DU PLESSIS, in 1781; were essentially the same disease. In all these, the fever was ushered in by chills, horripilations, and other premonitory and invading symptoms, which were soon followed by pains in the head, loins, and limbs; by nausea, flushing, profuse sweat, dyspnœa, and, about the third day, by a miliary eruption. Numerous other epidemics that have presented this form of eruption as a prominent symptom, have been described by writers, who observed them during the two last centuries. But in these it was apparently caused, either by a too heating treatment and regimen, or by the neglect of evacuations during the early stage of the disease; and it was not always connected with excessive sweat. It was, indeed, in most cases merely a symptomatic eruption appearing at an advanced period, in a similar manner to petechiæ, &c., with which it was even sometimes associated. In the epidemics, however, which I have above enumerated, the eruption was not a consequence of neglected evacuations, nor of a heating regimen, for the treatment was generally depletory and cooling, and it occurred earlier in the disease, although always preceded by profuse sweat, which was coëtaneous with the vascular excitement, and always peculiar and offensive. So thick a vapour generally surrounded the sick, arising from the excessive perspiration, that the flame of a candle was obscured by it.

419. (b) The epidemic occurrence of sweating fever in various parts of Picardy was first noticed in 1718. Since that time it has frequently appeared in that province, and in other parts of France; and has more nearly approached, than the epidemics noticed above, the characters of the sweating sickness of the 15th and 16th centuries, in respect of the rapidity of its course, the profuse sweat, and the frequent absence of the miliary eruption. The sweating fever of Picardy appears to have prevailed more or less in various parts of this province and of Flanders, from 1718 till 1747. In this year it appeared in Paris; and

was described by BELLOT, MALOUIN, and BOYER. In various seasons, cases equal in severity to those of the terrible sweating sickness of the 15th century occasionally occurred. These writers observed some that ran their fatal course in fifteen hours, although more generally death did not take place until the third, fourth, fifth, or sixth day, or ever later. When patients passed the seventh day, they generally recovered.—The most robust were the most violently attacked; children and the aged generally escaped. Irruptions of this form of the disease occurred in various parts on the Oise, in 1747; at Beauvais in 1750; in several parts of the north of France in 1753; and in the environs of Amiens in 1758. (MEYZEREI, VANDERMONDE, &c.) The chief peculiarities of these epidemics were a frequent occurrence of hæmorrhages, and of severe and complicated cases, often terminating fatally at the end of one or two days. Robust persons were the most severely attacked in these as in other epidemics. Females often experienced menorrhagia in the course of the disease; and hæmorrhages occurring on the third or fourth day were generally fatal. The sweat was fetid, or putrid, as likewise was the air expired by the patient. Bloodletting was employed at the commencement in the more robust and plethoric; at an advanced stage it was most injurious. Emetics, cooling aperients, acidulated drinks, refrigerants, &c. were also prescribed; and at a later period the preparations of cinchona, the decoction of contrayerva, camphor, &c. These were found the most successful remedies.—The epidemic of Saint Quentin, in 1768 and 1769, was generally ushered in by slight chills, rapidly followed by great heat, thirst, pains, and other symptoms. The treatment just described was most commonly employed. Since then, several other irruptions of this fever have occurred, presenting the phenomena about to be enumerated. That which took place in 1821, and was ably described by M. RAYER, was evidently more asthenic than those above referred to.

420. ii. *Symptoms*.—Individual cases of this fever are very much modified, even during the same epidemic, by the prominent affection of different organs, in different persons. To this circumstance is to be imputed its great diversity, as to severity and character, even in the same family and in similar circumstances. M. RAYER, however, divides it into two forms, the *mild* and the *malignant*; but it is obvious that intermediate grades are equally common; and that most of the malignant or severe cases, are rendered such by local complications.—(a) In the *milder* form, patients frequently complain of lassitude, loss of appetite, and pains over the eyes. Sometimes they feel the gradual accession of fever, and as if a vapour were extending over their limbs, until it amounts to burning heat, and more generally constriction about the epigastrium, for a very short time before the *hot vapour* is exhaled in the form of sweat from the surface. Occasionally persons have gone to bed apparently well, and have awaked bathed in sweat, which continued till their recovery or death (RAYER). The tongue is covered with a white, foul, or, more rarely, a yellow fur; and the mouth is clammy. There is more or less thirst, no appetite, and the bowels are costive throughout the disease. The urine is scanty. Respiration is oppressed, and the head aches.

The pulse is slightly accelerated, but becomes more frequent at the period of the eruption; and is commonly full and soft. This state continues through the second, third, and fourth days; on which, but commonly on the third, a slight sensation of tingling is felt, followed by a miliary eruption on the skin. The *eruption* appears first on the neck, and spreads, either rapidly and generally, or slowly and partially, to the breast, sides, trunk, and insides of the thighs, legs, and arms. It may, however, come out suddenly as well as in succession, and be distinct or confluent. The vesicles which constitute it are the size of millet seeds, diaphanous or pearly, and are easily felt by the fingers. They are often intermixed with red papulæ; and more rarely, bullæ appear on some parts of the body. In about two or three days they dry up, and are followed by a desquamation of the cuticle.—The *sweating* is much more constant in its occurrence than the eruption—is always present, is remarkably profuse throughout the disease, especially before the eruption has become general, as it afterwards is somewhat diminished; and is attended by a peculiar odour, which RAYER, SCHAHL, and HESSERT compare to that of rotten straw, and M. MENIÈRE to that of water impregnated with chlorine, or to that of the stools of patients in cholera. LE PECQ-DE-LA-CLOTURE says that it has a rotten-sour smell. The surface is hot, and more or less red. The sweat, rarefied by the heat, forms a cloud around the patient, that is condensed, and falls like fine rain or dew upon the bedclothes. The dyspnœa seems to depend upon congestion of the lungs and large vessels, and is referred chiefly to the præcordia or to the epigastrium. The headach may be suborbital or general: it is dull, heavy, and depressing, and seems not to be altogether the result of vascular determination to, or congestion of, the brain. In this form, the abdominal regions present nothing particular. The symptoms decline by degrees, and rarely continue longer than fourteen days; they commonly disappear about the eighth or tenth day.

421. (b) The *severe, complicated, or malignant* form is generally sudden in its attack as well as the mild; but lassitude and want of appetite usually precede it for some days. The principal symptoms of invasion are, sometimes chills or horripilations, and commonly vertigo, violent headach, nausea, efforts to vomit, flushed countenance, urgent dyspnœa; pain in the epigastrium, loins, and limbs; anxiety; throbbings of the arteries, and most profuse sweat. Either the cerebral, or the thoracic, or the abdominal, symptoms predominate in different cases, and give rise to distinct complications. Where the *head* is more especially implicated, delirium, coma, and convulsions are often present, and soon terminate life. In these, the patient first complains of vertigo, severe headach, nausea or vomiting, flushed face, injected and starting eyes, epistaxis, throbbing of the carotids and temporal arteries, &c., and soon becomes delirious and comatose. In rarer instances, the *spinal chord* and its membranes are particularly affected, the patient complaining of painful tension in the course of the spine, with tetanic rigidity or spasms of the voluntary muscles. When the *lungs* are chiefly affected, there is often deep-seated pain in the chest, great dyspnœa, a short and quick respira-

ation, the crepitating rattle, or a blowing noise in some of the lobes of the lungs, diminished sonorousness of the chest, a full and frequent pulse, and bloody expectoration or hæmoptysis, indicating inflammation or inflammatory congestion of the respiratory organs. When the *digestive organs* are predominantly diseased, the patient complains of an acute constrictive pain in the epigastrium, with urgent anxiety, frequent sighing, a sense of suffocation, or of weight in the chest, and an unusual pulsation in the region of the stomach. These appear from the commencement, are exacerbated at intervals, and are most severe just before the eruption. In others, the symptoms indicate affection of the bowels, with constipation; and in some, severe pains are felt in the hypogastrium, with scanty, high coloured urine, and difficulty in voiding it.—This violent form of the disease may prove fatal in twenty-four or forty-eight hours, or in three or four days; but it commonly runs its course in from one to two weeks in favourable cases; sometimes, however, extending beyond three weeks. During convalescence, debility is its chief consequence, secondary affections being rare. Those that do occur, are gastro-intestinal disorders, and the eruption of boils.

422. The alterations of structure have been imperfectly observed.—When a fatal result has been preceded by anxiety, pain, or burning in the epigastrium, the mucous coat of the stomach and duodenum has been found much injected. In the cerebral complication, the brain has been found congested, the membranes injected, and the ventricles filled with serum. In the pulmonary complication, congestion of the lungs, and hepatization of portions of it, have been remarked. Although epidemic visitations of this disease in France have been frequent in modern times, and fatal cases very numerous, yet its pathological anatomy has been very imperfectly investigated. It is evident that death is caused chiefly by the severity of the complications accompanying it.

423. iii. *Diagnosis*.—The constant, the profuse, and the peculiar sweat attending the disease from the time of its development, not only characterises it, but distinguishes it from all other fevers. The severity of the complications in the intense form, especially at the time of attack, and upon the appearance of the eruption, the character of the eruption, the epidemic prevalence of the malady, and its infectious nature, further serve to distinguish it. The descriptions of the *sweating sickness* by CAIUS, WILLIS and others prove that it was a more intense form of this disease than has been lately observed. The characteristic symptoms of the former all exist in the latter; and, although the eruption is not mentioned in the sweating sickness, this appears not to have been a general symptom in recent epidemics. M. RAYER states it to have been wanting in a great number of cases, in the epidemic of 1821; and M. MENIÈRE makes a similar remark as to that of 1832.

424. iv. *Prognosis*.—Sweating fever, as observed in modern times, is a mild disease in its simple form. Predominant affection of any internal organ will render the prognosis unfavourable, according to the severity of such affection. However alarming the symptoms, if they decline

upon the appearance of the eruption, a favourable issue may be anticipated. M. RAYER states that, in 1821, the eruption was independent of irritation of the stomach; that it was confluent without violent previous pain in the epigastrium or nausea; that it did not always succeed the most profuse and incessant sweat; and that it did not invariably appear in cases where the gastro-intestinal disorder was the most remarkable. Death was often sudden—more unexpected than in the common eruptive fevers,—and often followed upon shrivelling of the vesicles. The greatest number of deaths occurred in 1821, between the ages of 23 and 33. The mortality in males was one in thirteen; and among females, one in twenty-eight. In the earlier epidemics observed in Picardy, the mortality was very much greater than this. It was greatest at the beginning and decline of the epidemic; and among bakers, smiths, and farriers: but was variable in different townships. The epidemic of 1832 was in many instances followed by pestilential cholera. The latter malady often followed the decline of, or convalescence from, the former, and even occasionally appeared in its course; the mortality being thereby much increased.

425. v. *Causes*.—The theatre of the epidemic of 1821, was bounded by extensive forests. M. RAYER states, that the disease is endemic in some situations; and that it may occur sporadically where it has prevailed epidemically. It has been observed only between 43° and 60° North latitude. Moist and shady places, excessive heat, and an atmosphere surcharged with electricity, seem to favour its irruption. No age gives immunity from an attack; but adults and females are most obnoxious to it. M. MENIÈRE states, that many of those who had the disease in 1821, were again attacked, and died of it, in the epidemic of 1832. When once engendered, it spreads by infection, in the same manner as typhus, scarlatina, and measles. Unhealthy situations, and the poor in the vicinity of the place where it first appeared, suffered in proportion to their proximity, during these two epidemics. M. MENIÈRE remarks that, of the numerous epidemics which have occurred in France, and in other countries, since 1718, to the present time, there is none which shows its origin, either in marsh exhalations, or in unwholesome food.

426. vi. *Treatment*.—Isolation, temporary migration, and avoidance of the affected, are the only preservative means that can be depended upon in this malady.—The *mild states* require but little aid; and it is doubtful if medical treatment will either shorten or alleviate the attack. In the *severer forms*, and where some internal organ is especially affected, appropriate remedies ought to be employed to guard it from danger. If the affection of the head, or of the chest, or of the digestive organs, be slight, *local depletions* will give relief. If the local complication be severe, general *bloodlettings*, with powerful external and internal derivatives, as blisters, sinapisms, purgatives, &c., will be occasionally used with success. But M. RAYER remarks, that the cerebral affection, when severe, is often rapidly fatal, notwithstanding the repeated abstraction of blood; and that the nervous phenomena are occasionally independent of actual inflammation.—After the eruption, bloodletting is always injurious; and if

it be resorted to at an earlier stage, and in large quantity, with the view of cutting short the disease, it may have a fatal effect, but it never will produce the desired result. When the eruption disappears suddenly, dry frictions, *urtication*, *sinapisms*, *blisters*, and rubefacient liniments, ought to be employed to solicit its return. *Sudorifics* may also be employed in this case; but they are seldom useful in other circumstances, as it does not seem advisable to use means to increase the sweat. SCHAHL and HESSERT found *cold bathing* and *aspersion* of cold water beneficial at an early stage; and M. RAYER observed the pain at the epigastrium, and spasm of adjoining parts, preceding the eruption, to cease after the application of *cold epithems* to this region. Emollient cataplasms, *fomentations*, and *clysters*, will alleviate abdominal pain, and dysuria; and the general *warm bath*, the *hip bath*, and frictions of the surface, will have a similar effect, and promote convalescence, particularly if the intestinal or the urinary canal be disordered. In the more recent epidemics, *ipecacuanha* and the preparations of *antimony* were given in the first stage, with the view of rendering the subsequent course of the disease more mild; but this practice was found more injurious than beneficial.

427. The above comprises more than all that M. RAYER, the historian of the epidemic of 1821, has advanced respecting the treatment. TESSIER, BOYER, and MENIÈRE, however, state, that full *bloodletting* at the commencement is generally beneficial, and evidently relieves all the urgent symptoms. Indeed, the epistaxis often attending the cerebral affection, the hæmoptysis accompanying the pulmonary congestion, and the character of the gastro-intestinal symptoms, most obviously demand it. They further advise tepid diluents in moderate quantities; gentle anodynes to relieve the insomnia generally complained of; and mild derivatives to favour the eruption, which, when copious, often alleviates the internal affections. M. RAYER says no more of the use of *purgatives* in this disease, than if such means were entirely unknown. The writers who treated the epidemics in the 17th, and earlier part of the last century, employed them freely, and were certainly not less successful in their treatment than he. M. MENIÈRE advises the milder kinds to be exhibited, in most cases, and especially when the tongue is loaded. When the pulmonary congestion is urgent, he directs full bloodlettings and external revulsants; but he judiciously advises the effect of the former to be sedulously watched during the operation, as a too careless mode of abstracting blood, or a too large quantity, may produce instant and fatal collapse. There is evidently more of congestion than of inflammation in all the internal complications of this disease; and vital or nervous power is more or less depressed: therefore, although free depletions are often necessary, they should not be confided in alone; but *camphor*, *ammonia*, *serpentaria*, &c., ought to be exhibited according to the peculiarities of the case, and conformably with the principles explained in various sections of this article. When the eruption appears, means calculated to suppress it, or even to delay or diminish it, should be avoided. Vascular depletions have been then found injurious, and even speedily fatal; and cold applied to the surface is equally

dangerous: errors of diet and regimen are likewise injurious.

428. *Regimen*.—Patients ought to be deprived of nourishment of every kind, the first four or five days of the disease, or even longer. Diluents of a mild kind, and tepid, should be given in moderate quantity. A little veal or chicken broth may be allowed about the sixth, seventh, or eighth day; and the quantity and consistency of the food gradually increased. Relapses may follow errors in diet, or consecutive gastro-intestinal disorder may be induced by this cause. The regimènal and other means usually required in epidemical maladies, are necessary in this.

BIBLIOG. AND REFER. — *L. Frisius*, *Sudoris Anglici*, Ratio, Præservatio, Curatio, 4to. Arg. 1529. — *S. Richini*, *De Sudatoria Feb. Curatione*, 4to. Colon. 1529. — *J. Schiller*, *De Peste Britannica Liber*, 8vo. 1531. — *J. Benedictus*, *De Novo et prius German. inaudito Morbo, quem Anglicum Sudorem appellant*, 8vo. Crac. 1550. — *J. Caius*, *De Ephemera Britannica*, 8vo. Lond. 1721. — *Fracastorius*, *De Morbis Contagiosis*, l. ii. cap. 5. — *Baco de Verulamio*, *Hist. Henrici VII.* p. 5. — *Camerarius*, *Memorab. cent. viii.* No. 49. — *Forestus*, *Observ. et Curat. Med.* l. xxviii. p. 198. — *Schenk*, *Observ. Med. Rar.* fol. Lugd. 1644, p. 739. — See *Castris*, *Cordus*, *Keppler*, *Nidemonstani*, *Neuenaar*, *Phrygius*, et *Wierus*, in *Haller's Biblioth. Med. Pract.* vol. i. and ii. *passim*. — *Sennertus*, *De Febribus*, l. iv. cap. 15. — *Juncker*, *De Purpura Alba Maligna et Benigna*. Halæ, 1738. — *Salzmänn*, *Hist. Purpuræ Miliaris Albæ cum primis Argent. et Viciniam infestantis*. Arg. 1736. — *Bellet*, *An Febri putridæ Picardis Suette dictæ Sudorifera?* 4to. Paris, 1733. — *Barker*, *Observat. on the present Epidemic Fever*. Lond. 1741. — *Vandermonde*, *Journ. de Méd.* t. xii. p. 354. (*The epidemic of Guise in June and July, 1759.*) — *Ibid.* t. xx. p. 7. — *Boyer*, *Méthode à suivre dans le Traitement des differ. Mal. Epidémiques*, &c. 12mo. Paris, 1761. (*The epidemic of Beauvais in 1750.*) — *De Augustinis*, *Observat. circa Febres Miliare regnantes Mediolani, 1755.* Med. 1758. 8vo. — *Fantoni*, *De Acutis Febr. Miliaris*, &c. Nissa, 1762. — *Fischer*, *De Febr. Miliari Purpura Alba dicta*. Riga, 1767. — *Baraillon*, *Mém. de la Soc. Roy. de Méd.* A. 1776, p. 193. — *De Haen*, *Rat. Med.* p. viii. c. 10. — *Tessier*, *Mém. de la Soc. Roy. de Méd. de Paris*, 4to. t. ii. p. 46. (*The epidemic of Hardvilliers in May, 1773.*) — *Gastellier*, *Traité de la Fièvre Miliare Epidémique*, 12mo. Paris, 1784. — *Pujol*, *Œuvres*, t. iii. p. 261. 8vo. (*The epidemic of Languedoc in the spring of 1782.*) — *Thomann*, *Annalen ad 1800*, p. 259. — *Kreysig*, in *Hufeland*, *Journ. der Pract. Heilk.* l. xii. st. 3. p. 59. — *Schmidtman*, in *Hufeland*, *Journ. der Pract. Arzneik.* b. iii. p. 449. — *Sternberg*, in *Horn*, *Archiv.* b. v. p. 22. — *J. A. F. Ozanam*, *Hist. Méd. des Maladies Epidémiques*, &c. 8vo. Paris, 1823, vol. iii. p. 62. 105. — *Rayer*, *Sur l'Epidémie qui à régné dans le Departement de l'Oise en 1821*, 8vo. Paris, 1822; and *Treatise on the Diseases of the Skin*, by *Willis*, 8vo. Lond. 1835, p. 353. — *Menière*, *Archives Gén. de Méd.* t. xxix. p. 100. (*The epidemic of the Department of the Oise in 1832.*) — *Hourmann*, *Gaz. Médicale*. Paris, 1832, p. 271. — *Pinel-Grandchamps*, *Lancette Française*, t. vi. p. 161. — *Moreau*, *Journ. Hebdomad.* Sept. 1832.

XXI. FEVER, SYNOCHOID. SYN.—*Synochus*, Auct. var.; *Enecia Synochus*, Good; *Synochus mitior*, S. Smith; *Common Continued Fever*.

429. DEFIN.—*Languor, lassitude, and chills, followed by vertigo, moderate vascular reaction, and other febrile symptoms, of a continued type, and regular course.*

430. This is the most common form of continued fever in this country. It appears either sporadically or epidemically. In the latter case, it is frequently complicated, or characterised by predominant affection of some particular viscus or part, and thence generally assumes a severer character than in its sporadic form. It often appears in this latter manner from other causes than infection; but, in circumstances favourable to the generation of an infectious effluvium, this may become a superadded or a chief cause, or, indeed, the only cause; but, in this case, the disease which results is some one of the more common forms enumerated under the *typhoid*

species of continued fever.—As, therefore, the causes of *synchoid*, and of these forms of *typhoid* fever, are often the same—their intensity and concurrence producing the more severe states of disease, as well as giving rise to an infectious miasm—the view which is about to be taken of them with reference to the former species, will very nearly serve also for the latter.

431. i. CAUSES.—A. Of the *remote causes* of the varieties of continued fevers most frequently observed in this and other temperate climates, those which precede the operation of the more effective causes, which are usually internal as respects the œconomy, and which, from the circumstance of their disposing the system to the operation of these latter causes, have been usually called the *predisposing*, require first to be noticed. It is often difficult to determine in what the disposition to be affected by these forms of fever consists, and in what manner it is caused. To say, with many, that it arises from an increased susceptibility, does not advance our information one step, and is merely the substitution of one term for another. Close observation of the circumstances connected with the origin of these diseases will show us, that the disposition to become affected with them is not the result of exactly the same circumstances as favour the appearance of ardent fever. A depressed or weak state of vital power, especially as manifested in the nervous systems, but particularly in that of organic life, seems to be one of the most common causes of predisposition. This is proved by the fact, that perfect health, mental activity and energy, confidence in various means of prevention, the moderate use of tonics, &c., enable the body to resist the impression of the exciting causes, particularly infectious and mephitic effluvia; and that fear of the disease, despondency, the depressing feelings and emotions, fatigue, increased sensibility, disorder of the digestive and assimilating functions, &c., are amongst the most common occasions of these causes taking effect.—But, although diminished energy of the powers of life has a marked influence in favouring the operation of the exciting causes, yet something more is required; and this must be referred to a certain constitution of frame, which is influenced sometimes in a relative manner only by relative causes, and at other times only by positive causes, and which often either resists the operation of the usual causes altogether, or yields merely to the combined action of a greater or less number.

432. A much greater predisposition to be affected by continued fevers exists between the ages of fifteen and thirty-five, than at any other period; the forms of fever being generally of a more inflammatory and acute kind between these ages, and in the sanguine, irritable, and plethoric constitutions; whilst persons past the latter of these ages, and those of a lymphatic, leucophlegmatic, or melancholic temperament, are more liable to experience the lower grades of action. Scarcity, famine, and, consequently, insufficient and unwholesome nourishment, among the lower classes of the community, are the chief causes of the generation and spread of fevers, especially those of a simple, low, and infectious character. Whatever depresses or exhausts the vital and moral energies, exposes the body to the impression

of the exciting causes. The circumstances which produce this effect are fully explained in the article DISEASE (§ 21. 23. 27—36.), and in a previous section (§ 64.).

433. The disposition, also, which is generated by certain epidemic constitutions of the atmosphere and season should not be left out of consideration. A peculiar diathesis seems to be gradually and generally induced by the epidemic influence, whatever that influence may be in respect of its nature; and this diathesis or change of the vital manifestations of the organisation rapidly passes into febrile commotion upon the action of one or more of the exciting causes. The change thus effected in the diathesis, and increased by the impression of the exciting causes, may hence be viewed as the proximate cause, or earliest pathological state, of the disease; and to its continuance or non-continuance after the febrile action is fully developed, is often to be imputed the disposition or indisposition to relapse. This is more particularly the case in respect of the fevers caused by exhalations from the soil and from decayed vegetable matters. Infectious miasms—or the effluvia from the bodies of those in fever—suddenly and remarkably increase the morbid diathesis; but when the resulting disease has been undergone, the morbid diathesis is terminated, and a disposition to a return or relapse is altogether or nearly lost. Although epidemic states of the air thus do not favour relapses of infectious fevers, yet they greatly dispose the system to a first attack upon exposure to the exciting causes, when the diathesis has not been changed by a previous attack.

434. B. The *exciting causes* of continued fever are upon the whole much better known than the states of the system which dispose to their operation. They are extremely numerous; for whatever interests the vital energy so as to disturb generally its manifestations, and to occasion a morbid reaction, may be an exciting cause of fever.—It is unnecessary to enumerate even the most influential of them, as they are adduced with sufficient details, in the articles DISEASE (§ 55—63.), ENDEMIC INFLUENCES, INFECTION, and in an early section of this article (§ 65.). The chief causes of this class of fevers are—1st. Those which proceed (a) from the soil; (b) from its productions in a state of decay; and (c) from animal matter undergoing decomposition; either of these acting separately, or all of them conjointly;—2d. Animal miasms—(a) from healthy persons or animals crowded together, or confined in imperfectly ventilated situations, and without due regard to cleanliness; (b) from persons labouring under diseases of various kinds in confined apartments; and (c) from one or more persons affected by the disease which the effluvia propagates;—and, 3d. Changes taking place in one or more of the various functions, and which having reached a certain pitch, break out in open fever. Each of these requires a few remarks.

435. a. Emanations from the soil or its productions in a state of decay, are most frequently productive of periodic fevers; but they occasionally also give rise to continued fever, especially during certain states of season and temperature, and in plethoric and robust constitutions. What the conditions are, that occasion the continued, in preference to the periodic, type, cannot

be precisely stated. Extreme ranges of temperature, particularly high grades of it, and humid states of the air, may have considerable influence, as is, indeed, often observed in warm climates, amongst Europeans who have recently removed thither; but, in this and other temperate countries, the continued forms of fever much less frequently proceed from this source alone, than is supposed by some writers. In many places, exhalations from dead animal matter concur with those proper to the soil and its productions in causing fever; and, in this case, the disease assumes a more continued type and a lower grade of action; the circulating and secreted fluids being more remarkably vitiated. There can be no doubt, also, that the particular form and complication of the fever often depend much upon the water in common use, upon the nature of the soil, and upon the exuberance of its products. Water loaded with decaying animal or vegetable matter; rich, clay, deep, low, and absorbent soils, &c.; and the effluvia from putrefying animal matter; are frequently productive, particularly when conjoined, of continued fever, which often assumes a gastric or enteric character.

436. *b. Animal miasms* from a number of persons shut up in small space, in ill ventilated and crowded apartments, and in low and humid localities, as in ships of war, transports, jails, camps, besieged towns, workhouses, &c., will, in favourable circumstances, so contaminate the air with animal effluvia as to give rise to fever, presenting characters of severity in proportion to the extent to which the air is vitiated. Instances of this kind are referred to in the articles EPIDEMICS (§ 12. 17. &c.) and INFECTION, and are adduced by PRINGLE, LIND, BLANE, and by most recent writers on Fever. It is unnecessary to offer any remarks upon this, and the other sources of animal miasms, which act as a poison on sound persons; and occasion fevers, or upon infection as a principal cause of the specific forms of the disease, as they are fully illustrated in that article.

437. *c. That changes may take place spontaneously in one or more of the functions, and proceed to the extent of giving rise to the worst forms of fever, appears to be fully proved.* The chief causes of these changes seem to be protracted or excessive mental anxiety and depression, loss of property, disappointment, wounded pride, humiliating occurrences, &c. These causes, however, often concur with the predisposition arising out of disorder of the digestive and assimilating functions, especially when such disorder is connected with colluvies on the *prima via*, and a torpid or loaded state of the biliary organs; and are reinforced by exposure to cold, insufficient nourishment, changes in the usual modes or habits of life, want of sleep, and exhalations from the soil, &c.

438. *C. Determining influences, &c.*—There are numerous causes which, although often insufficient of themselves to produce continued fever, are remarkably influential in giving rise to predominant affection of particular organs, in modifying its form, or increasing its severity. Several of the exciting causes, moreover, have the power not only of occasioning the disease, but also of determining its type, form, and character. This is the case more especially with the effluvia proceeding from an infected person. It is im-

portant to attend to these circumstances, more especially such as determine the nature of the complications, &c. of fever, as a due reference to them guides the practitioner to an appropriate plan of cure.—*Epidemic constitutions* are most influential in thus forming the kind and state of fever (see EPIDEMICS). Next to these are season and temperature; climate and situation; famine; the contingencies of war; employments and avocations; habits and modes of living; mental exertions and moral emotions; and previous disorder of some one or more of the internal viscera.

439. *a. During cold and dry seasons*, the more inflammatory, or sthenic, forms of fever, and pulmonary complications, are observed. In high ranges of temperature, and in those conjoined with humidity, the digestive mucous surface and liver are inordinately affected, and the period of increased excitement soon passes into exhaustion, with marked change in the circulating and excreted fluids, and often in the soft solids.—*β. Climate*, according to its temperature and humidity, exerts similar effects. The situation, when elevated very far from the level of the sea, has a similar influence to cold and dry seasons; but when it is low, confined, or near the sea, rivers, or lakes, the disadvantage of humidity, and the contingent evils of marsh exhalations, tend to aggravate the type, or to complicate the disease. The quality of the water has a remarkable influence, both in generating continued fever, and in determining its form; putrid water, or water containing decayed vegetable or animal matter, generally causing fever of an adynamic, gastric, enteric, or mucous character.—*γ. Employments and avocations* may either prevent or favour attacks of fever. Tanners and workmen exposed to the fumes of pitch, tar, chlorine, &c., are rarely affected, even when fever is epidemic. Persons much exposed to the open air, and vicissitudes of weather, are most liable to fever of a sthenic or phlogistic kind, and to the pulmonary and pleuritic complications.—*δ. Habits and modes of living* are very influential and powerful determining causes of fever, even in this climate. The influence which full and rich living, and its opposite, poor and unwholesome living, exert upon the state of the disease, has been sufficiently manifested by the epidemics which have prevailed at various times in Ireland since the commencement of the present century, according as they appeared in the poor and ill-fed, and as they extended to those in easy circumstances. In the former, fever usually assumes the common continued, or the milder adynamic and typhoid forms, often attended by the pulmonary complication, or with petechiæ, &c., and frequently passing into dysentery, &c.; in the latter class, it is either accompanied, at an early stage, with high action, or with congestion, and predominant affection of the head, liver, or stomach. In persons living chiefly upon fish, it generally assumes a low and putrid character. Those who are intemperate, or who have resorted to spirituous liquors on the invasion of the disease, present especial disorder of the brain and digestive mucous surface.—*ε. Intellectual exertion*, mental anxiety, and other inordinate emotions, may both occasion a severe fever, and aggravate its intensity, even when arising from infection; and, in both cases, a cerebral or typhoid complication, of a dangerous

kind, is produced. — *ζ. Previous disorder* heightens the severity of the disease, and necessarily determines its predominant features or complications, although sometimes in an indirect manner. Thus, it is common to observe bronchitis previous to, or attending the invasion of, fever, followed by a remarkable affection of the brain and of the mucous membrane of the intestines. In this case, the changes effected by respiration on the blood are imperfect; and, consequently, this fluid becomes morbid, — disordering first the functions and ultimately the structure, of the digestive mucous surface and brain.

440. *ii. DESCRIPTION.* — *Common continued fever* occurs in a simple and complicated form, presenting various grades of severity; the severe and complicated states passing into, or becoming identified with, varieties of the adynamic species. The severe states of common fever have been very generally imputed to its complications with inflammation of internal parts; but, although its complications are necessarily severe, yet it may be equally so without any evidence of local or predominant affection. This, however, is seldom the case. — I shall, therefore, first describe the simple form; and afterwards the more usual complications and states of severity.

441. *A. Simple Continued Fever* — *Simple Fever*; *Mild Synochus*; *Synochus mitior* — is usually preceded by the symptoms described above, as constituting — *a. The precursory stage* (§ 34.), especially by *lassitude*, and a general feeling of uneasy debility, and mental languor. The countenance is pale; the features sharpened, dejected, or anxious; and the pulse weak and small. — *b.* After an indefinite period, varying from two or three, to several days, irregular chills, rigors or shivering, commonly alternating with transient flushings or feelings of heat, are experienced, with the symptoms characteristic of the *period of invasion* (§ 35.). This stage is seldom attended by any actual coldness of the surface, particularly after it has continued a short time; the chilliness being accompanied by increased heat, constriction, and dryness of the skin. — *c.* With the disappearance of the chills, the period of *reaction* or of *excitement* (§ 36.), and all the phenomena associated with it, supervene. The vertigo, pains of the head, back, and limbs, and restlessness, usually present in the preceding stage, are increased in this. The patient complains of mental confusion and inability; of general uneasiness and restlessness; the countenance becomes full and flushed; the tongue white, foul, loaded, or furred; the heat of surface generally rises above 100°, and the pulse and respiration are fuller, stronger, and more frequent than natural; the pulse being commonly from 90 to 100 or 105 beats in a minute. The fever is now developed, and proceeds, as described above (§ 36.), usually for several days, — its duration varying from two, three, or four, days to as many weeks, until it either subsides in consequence of the treatment adopted, or passes off by means of some critical evacuation (*the period of crisis*), which most frequently occurs on one of the critical days, from the 3d to the 21st day from the time of invasion, or that in which chills or rigors were first felt. — The stages of *decline* and *convalescence* commonly advance in the manner stated above (§ 41, 42.).

442. This mild form of fever generally *termi-*

nates favourably, even when left to nature; but it may become complicated in its course, or pass into a state of dangerous, or even fatal, exhaustion towards the end of the second week, particularly in weak, aged, and exhausted persons. The return of the healthy functions is indicated — *a.* by the subsidence of the prominent morbid actions; — *b.* by the appearance of critical evacuations; — *c.* by a quiet and prolonged sleep, out of which the patient awakens refreshed, and partially restored; — and, *d.* by the other phenomena already enumerated (§ 41.), as indicative of a gradual decline of the disease. The transition to a severer form of fever is commonly owing to the occurrence of a predominant affection of the respiratory surfaces, or to the change induced in the circulating and secreted fluids, or to the affection of the digestive mucous surface, or to the circulation within the head.

443. *B. Severe or Complicated Synochoid Fever* — *Synochus gravior*; *Severe Synochus* — occurs from the same causes that produce the milder disease, either acting with greater intensity, or aided by additional circumstances. — The several stages may present a more severe affection of all the functions, than has been now described, without any very predominant lesion of a particular organ; but much more frequently some important viscus betrays increased disorder, generally of an inflammatory or disorganising kind. Yet this predominant lesion is not altogether identical with inflammation — certainly not with the inflammation primarily affecting healthy persons. It is less acute or intense as respects the symptoms attending it, more asthenic as regards the state of constitutional power, and more diffusive and sub-acute in its character, than common phlegmasia. It partakes of more of the features of the erysipelatous than of those of common or pure inflammation. Even when the local affection is more than usually phlogistic in appearance, still it is most important to recollect, especially as respects the treatment, that it is preceded and attended by a more or less severe constitutional disturbance, by lesion of the various manifestations of life, and by a change of the circulating and secreted fluids, — circumstances arising out of the poisonous influence of the febrile cause, and imparting the peculiar characters to this affection, — changing it from the true phlogistic or sthenic inflammatory condition, and determining, accordingly, the consequent lesions (§ 50.). Instead, therefore, of viewing the complication as the cause of the severity of the fever, we should rather consider the intensity of the morbid impression made by the febrile poison, and the resulting consequences, as the principal source of severity and of local affection, aided by the predisposed state of constitution, and of the viscus especially affected. — I shall describe the predominant lesions or complications of synochoid fever, in the order of their usual succession, and of their frequency.

445. *a. Synochoid fever with predominant affection of the bronchi and lungs.* — This is the most common, and generally the earliest, complication, although it frequently exists only in a slight degree. The bronchial surface is often more or less congested and irritated, and the structure of the lungs sometimes implicated. — This complication is not necessarily severe in

proportion to the severity of the fever; but when it is early present, and its symptoms prominent, it necessarily aggravates the fever, and superinduces further complications, by impeding the changes produced in the blood by respiration. That the respiratory organs, particularly the bronchial lining, should be very frequently affected in fever, may be expected from the nature of the exciting causes, and the channels through which they invade the system, as already explained (§ 100. *et seq.*)—the respiratory surfaces being the parts on which the morbid impression is generally first made upon the frame.—In most instances, the predominant disorder of these organs is limited to the bronchial surface; but, in others, the substance of the lungs is also congested; and, in rarer cases, the pleura is at the same time implicated. During particular seasons and epidemics, and in some climates more frequently than in others, this complication is very generally observed. When the bronchial membrane is especially affected, and the symptoms are very obvious early in the disease, it has usually received the name of *Catarrhal Fever*. But the affection of the bronchi, especially when the mucous secretion is not abundant, and still more frequently that of the parenchyma of the lungs, is often nearly concealed by the severity of the cerebral symptoms superinduced by it, or is latent owing to the altered state of the circulating fluids, or masked by some other predominant lesion. This fact, first clearly established by LAENNEC, points out the necessity of having recourse to mediate auscultation, not only in cases presenting the open symptoms of the pulmonary complication, but also in those of considerable severity, and where the sensorium is much disturbed.

446. The *bronchial affection* is generally not very remarkable during the first two or three days; the patient complaining only of a slight oppression or constriction in the chest, with accelerated respiration and occasional sighing. To these succeed, fits of dry cough, wheezing, and, subsequently, the expectoration of a dark viscid mucus. There is often no cough; and the bronchial affection is evinced chiefly by the mucous rhonchus heard more or less extensively upon auscultation, by the disordered breathing, and by the matter expectorated. When the mucous rattle is heard extensively, and particularly if it extend to both lungs, great danger should be apprehended; for the changes induced by respiration on the blood being impeded, this fluid becomes vitiated and induces serious disturbance of the brain, and of the excreting organs and surfaces, ultimately passing into structural lesion. If the affection implicate much of the substance and vesicular structure of the lungs, the breathing becomes hurried, oppressed, or laborious, especially after coughing; and the expectoration rounded and streaked with blood. In such cases, the fever is always severe, and attended with much danger, generally in proportion to the extent to which the respiratory surface and lungs are affected. But the danger is not dependent solely upon the pulmonary affection, but also upon the consequences which have been just shown to arise out of it. When, therefore, with the symptoms now mentioned, the edges of the tongue and lips are dark or purplish, and the countenance of a dusky hue, or flushed or suf-

fused with a dark red; when the patient becomes delirious or comatose; the pulse very frequent, soft, and feeble; the abdomen tympanitic, or inordinately relaxed; the temperature of the extremities low, or their motions tremulous; and the tongue loaded with a brown or black coating; consecutive pathological states of great danger, owing to depressed vital power, and to contamination of the fluids, then exist.

447. It not infrequently happens, that a severe bronchial complication attends the early stage of this fever; and that, as soon as the blood is so contaminated, and the cerebral functions are so disturbed, as to obscure sensibility, and lower irritability, the bronchial affection becomes latent, and its more obvious symptoms disappear; the pathological conditions which it induced being now most prominent, and proving the immediate cause of an unfavourable result. If, in such cases, we succeed in removing the morbid condition of the blood, by exciting the nervous energy and the functions of excreting organs, the bronchial affection often returns, with the improvement in the circulating fluids and in the nervous functions; but it also often disappears entirely with the other affection of important organs, particularly when critical evacuations terminate the disease. This return of the bronchial affection with the decline of the other dangerous symptoms, I have remarked in several cases; but it may generally be permanently removed by appropriate means (§ 462.). In the progress of this complication, the expectoration, which was at first scanty and frothy or viscid, or altogether wanting, is more copious, of a pale yellow, or yellowish green hue, and gradually diminishes with the decline of the fever. In some instances, it becomes so abundant, as the disease passes its acme, as to favour the resolution of the inflammatory congestion of the bronchi or lungs, and thus to prove a salutary crisis, as remarked by some of the older writers.—When, with dyspnoea and oppression, there are much uneasiness and inability to expand the chest, with a short and quick respiration, active congestion of the parenchyma of the lungs should be suspected; and if, in addition to these, pain be occasioned on coughing, and on full respiration, an inflammatory state, probably extending to the pleura, may be dreaded.—In the last stage, the skin is dusky and cool; the pulse is feeble and hurried, more rarely slow and intermittent; the headach passes into incoherent wandering, or low muttering delirium, or coma, but never into violent delirium. When sensibility is early impaired, this complication may proceed to extensive organic change, without having been suspected during life, owing to the imperfect evolution of the usual signs, and to the circumstances already stated (§ 445.). But if the breathing be attentively observed, it will be always found more or less disordered in these cases; and if auscultation be also resorted to, the local affection will not pass undetected.

448. *b. Synchoid fever with predominant cerebral affection.*—This complication may appear early in fever, or at any period of its course. It may be the only prominent lesion, or it may supervene on either of the other predominant affections.—It may be only occasionally observed, or it may characterise particular epidemics; and

it may, moreover, be slight or sub-acute, or remarkably intense, and in all the intermediate degrees.—In the more *slight* or *sub-acute* forms, it constitutes the *Nervous Fever* of some writers; and, in the more *acute* and *intense* grades, the *Phrenitic* or *Brain Fever* of others.—The former of these very nearly approach, in their pathological states, the nervous variety of adynamic fever, denominated *Ataxic* by PINEL, *Neuro-sthenic* by HILDENBRAND, and *Typhus mitior* by CULLEN.

449. *α*. Common continued fever, with predominant cerebral affection—the *Neuro-sthenic* of HILDENBRAND—commences, and proceeds for two or three days, as the simple or mild form of the disease. Either then, or at an earlier period, the patient usually complains of pain in some part of the head, most frequently in the temples and forehead, or in the occiput, extending down the neck. The pain is often constant and severe, but it is sometimes slight or entirely wanting; and it is commonly attended by throbbing of the carotids and temporal arteries, and flushings of the countenance. In those cases where no pain is felt, even upon shaking the head, the cerebral affection may not be less urgent and dangerous: but there is always, in those, a very early and remarkable giddiness, either with or without flushing of the face. Occasionally the pain and giddiness alternate, and the latter is always distressing when the former is absent. The expression of the eyes is either heavy and dull, or morbidly brilliant and animated. The conjunctiva is generally loaded, injected, and suffused, in the former case; and brighter and more glistening in the latter. But the eyes are always more or less sensible to light, the eyebrows contracted, and lids half closed upon exposure to it. Hearing and the general sensibility are also more acute. Noises and light invariably increase all the symptoms. The heat of surface is generally above the natural standard, especially over the head; but it is often not augmented on the lower parts of the body. The patient is watchful and restless, and the expression of his countenance indicative of suffering. In the less acute cases, the pulse, the thirst, the appearances of the tongue and of the evacuations, are nearly as in the simple form; and the symptoms generally continue, without alteration, for several days. An important change then occurs. In favourable cases, the slumbers, which were short and disturbed, or attended by a slight dreamy delirium, become quiet, profound, and refreshing. In unfavourable cases, the pain in the head changes to a dull, lethargic state, with a great diminution of the sensibility, and with increased injection and suffusion of the eyes. Delirium, if it have not already appeared, now comes on, attended by moaning or by incoherent muttering, during short and interrupted slumbers; the tongue is loaded, dark, and dry; and the thirst is diminished. In from one to three days, the insensibility passes into coma, unless a favourable alteration takes place; the pulse becomes very quick, and often rises to 120 or upwards; the strength sinks; and the tongue is more dry. To these succeed tremors, rolling of the head on the pillow, tossing of the hands, picking at the bedclothes, and the other dangerous symptoms consequent upon the more acute states of this complication. Even when this

unfavourable change has occurred, a stop may be occasionally put to its progress, although it generally pursues its onward course. A more tranquil and protracted sleep; subsidence of the delirium, or of the tremors, or of the frequency of the pulse; and a cleaner or more moist tongue, commencing at its edges, with an improvement in the appearance of the countenance, and in the state of the skin and of the excretions; are the usual indications of an arrest of the dangerous progress of the disease.

450. *β*. In the more acute states, the cerebral symptoms are severe, and their progress rapid, in proportion to the intensity of the local complication; the headach or giddiness, the intolerance of light and noise, and the general sensibility, being coordinately excessive. The pain in the back, loins, and limbs, is very great; the skin is often intensely hot, and pungent, particularly over the scalp, and is occasionally covered by perspiration, which is rarely copious or general; the eyes are injected, and suffused; the breathing is frequent and suspirious; the patient is anxious, uneasy, and remarkably restless; he rolls the head, and is wholly without sleep. The pulse is at first strong, full, or bounding; but generally devoid of the hardness characteristic of primary or pure phrenitis. Sometimes it is oppressed; and, in the most intense states of complication, it is often intermittent, slow, or not much above the natural frequency. Within four or five days, the pain passes into delirium and insensibility. The delirium is sometimes violent, and is then soon followed by tremors and insensibility; and these by subsultus tendinum. The insensibility increases, and passes into a drowsy lethargy; the delirium continuing, but becoming low and muttering. The patient may still become observant, and answer when roused; but coma supervenes, occasionally with rolling of the eyeballs or squinting, dilatation of the pupils, and falling of the eyelids. The tongue is now parched and brown; the gums and teeth are covered by a dark mucous sordes; the evacuations take place unconsciously and involuntarily; the respiration becomes irregular; the pulse either slow, or remarkably rapid and feeble, or intermittent; and life soon terminated.

451. Between these extreme states, there is every grade of intensity, the above symptoms being variously modified. In some cases, the cerebral affection is very insidious, and more or less slow; in others, open, manifest, and rapid. In the former it may be indicated only by giddiness and sickness or vomiting; the pulse in the carotids, and temperature of the head, not being affected. In a case of this description, which lately occurred in my practice (Mr. H. of Fitzroy Market), all the symptoms subsided instantly upon bloodletting.—It may thus exist nevertheless, although in a more protracted form, and present but few of the above symptoms, which, however, are most frequently observed, but not all of them in the same case. The various grades of this complication may be further associated with considerable bronchial affection, or with the disorder of the digestive canal about to be noticed. In such cases, the predominant lesion, either in the head, the thorax, or abdomen, frequently obscures the others, until the treatment, by subduing it, renders them more evident,

or until some one of them acquires additional activity.

452. *c. Synochoid fever with predominant affection of the digestive mucous surface.*—The mucous surface of the stomach and intestines is affected more or less in all fevers, in common with the rest of the organisation. In the simple or mild continued fever, it is generally less disordered than in any other. But in the more severe form, it is often prominently deranged, either at the commencement or at a later period. — *a.* The affection of the *mucous surface of the stomach* is sometimes remarkable from the invasion of the disease. In this case, *retchings* and *vomiting* — symptoms seldom observed in the thoracic and cerebral complications, particularly the former — are always present; and the fever has hence been denominated by many writers, *Mild Gastric Fever*, from its very close resemblance to the species described above (§ 387.). The reare also pain and soreness felt in the epigastrium, or in the left hypochondrium, and sometimes also in the right, with tenderness on pressure. The bowels are generally costive; the tongue is red at its sides and point, and loaded with a dirty yellowish fur; the pulse is soft, regular, full, sometimes strong, seldom much above 100; and the skin is hot. This state of disease is often followed by cerebral affection, and all the characteristics of that complication; or it passes into the intestinal or enteric form.

453. *β.* The *enteric affection* is sometimes present almost at the commencement of the disease; more frequently it does not appear until a later period; and occasionally it supervenes upon either the cerebral or the gastric complications — aggravating the former, and allaying the latter of these affections. — In most cases, it indicates a severe form of fever, which, at an advanced stage, is further associated with very marked cerebral disturbance. It commonly commences with *looseness*, and with *pain* and *soreness* in the abdomen, especially on pressure. Pain and tenderness are much less complained of when this complication occurs late in the disease, or when the cerebral symptoms are also very prominent. In cases of the early appearance of the enteric disorder, abdominal pain commonly ceases as the fever advances, particularly if the head become also very much affected, even when the purging and other symptoms are increased. The tenderness, however, generally continues much longer. The tongue is at first unusually red at the sides and point, loaded with a dirty white or greyish fur, and moist. As the fever advances, the redness becomes darker and duller, the surface drier, and the fur browner; and at last dark mucous sordes collect on the teeth and lips. The abdomen is commonly soft and natural, but is sometimes hard or doughy. The pulse is at first full, and soft, ranging from 80 to 100; but usually becoming more frequent at an advanced period. Thirst is also present, unless when the head is much affected, and at the last stage of unfavourable cases. When this complication does not evince any improvement in the course of two or three days, it assumes nearly the same features as characterise the worst cases attended by cephalic affection (§ 450.).

454. When the enteric affection comes on in the course of the cerebral complication, it may

pass unheeded, unless the physician is particularly watchful, and expert in detecting it. In these cases, sensibility is so obscured, that pain is seldom felt, even upon firm pressure; and the bowels are occasionally but little disturbed. The tongue, however, is red at its point and edges, is covered by a dirty fur, and is dry: the pulse is generally about 110, soft, and small. In both these states of enteric disorder, the looseness or diarrhoea is the most frequent symptom. The stools are from three or four to eight or ten in the twenty-four hours; and are at first feculent, foetid, dark, and thin. They subsequently become, in unfavourable cases, watery and of an ochrey hue,—an appearance imputed by Dr. BRIGHT to ulceration in the intestines. But this result is more common in the enteric complication of adynamic than of synochoid fever.

455. *γ.* The *complications* of the common continued fever of this and other temperate climates, are more frequently *associated* or *mixed*, as Dr. SOUTHWOOD SMITH has very judiciously insisted upon, than met with singly. In these mixed affections, however, one or other usually predominates more or less; although cases sometimes occur in which it is difficult to say which is most prominent; or the predominating disorder of an early stage subsides, and is succeeded or obscured by another. Occasionally, also, other complications besides those above specified appear, even in the same epidemic.—*Sore throat*, or *inflammations* of the *faucis*, *pharynx*, or *œsophagus*, or severe affection of the *liver*, with more or less disorder of the biliary secretion, sometimes accompanies one or other of the prominent affections above described.

456. *iii. TREATMENT.*—In this fever, as well as in all others in temperate climates, the *indications* and *circumstances* stated above (§ 123, 124.), as deserving of especial attention, should be strictly observed. The prevailing epidemic, and the changes that take place in its nature, or characteristic states of vital action, with its progress and with the season, should be carefully studied and made the basis of treatment. Some difficulty may occur at first in coming to just conclusions; but it will vanish with the extent of observation, especially when diligence has been used. The chief points to which the attention of the practitioner will be directed are—the nature and concurrence of the causes, the extent to which they may have affected vital manifestations, the degree of excitement or vascular reaction in connection with nervous power, the state of the circulating and secreted fluids, and the nature and amount of local complications or determinations. The physician who has studied, in an intimate manner, the various phases of disordered vital manifestation, will have little difficulty in recognising the chief characteristics of fever, under the ever-shifting circumstances in which they present themselves, and in appropriating accordingly his method of cure.

457. *A.* The ancients observed carefully the spontaneous changes which take place in fever, and conduce to recovery (see art. CRISIS); and they were guided, in forming their indications of cure, by these changes, which they merely attempted to promote or to imitate. This mode of practice may be followed in synochoid fever more successfully, perhaps, than

in any other. Yet it will be better to combine with it the more modern indication, of resorting to such means as may subdue the more urgent symptoms, and avert contingent danger. If the patient be seen as early as the *premonitory* and *invading* stages, the impending disease may be averted by the means advised above (§ 121, 122.)—more especially by *emetics*, warm *diaphoretics*, and the *vapour bath*. But when *excitement* has commenced, the treatment should be antiphlogistic. In this stage, we should endeavour, by a careful examination of the symptoms, to ascertain the existence of local complications; and, having determined their absence, the question will then be as to having recourse to *bloodletting*. I have already considered this topic so fully (§ 128—139.) that nothing further need be here advanced. If the nature of the prevailing epidemic, or the degree of reaction, require depletions, the earlier in this stage they are resorted to the better. But even then they require caution and discrimination. If the excitement be slight, and the patient neither robust nor plethoric, and more especially if the causes and circumstances connected with the origin of the disease be of a depressing nature, they will be better withheld.

458. The exhibition of *emetics* in the stage of excitement was advised by many of the ancients, and practised by some of the most recent writers, although objected to by others. The reason of this difference of opinion is very obvious. There are states, even of this stage, in which they will be of service, and others in which they will be injurious. When reaction is slight—when the patient is not plethoric, has not experienced full vomiting, and does not complain of pain or of tenderness in the epigastrium or hypochondria—then emetics may be exhibited. But if the excitement be great, with determination to the head; and if the patient have already vomited freely, and more especially if the symptoms just mentioned be present, they should not be prescribed. (See § 149.)

459. *Purgatives*, so much decried by BROUSSAIS, and with some justice as respects several states of fever prevalent in France, are certainly of very great service in the common continued fever of this climate, when employed with a cautious discrimination. Early in this disease, calomel, either with or without James's powder, may be given at night, and a purgative draught in the morning. At a more advanced stage, calomel, or hydrargyrum cum creta, may be conjoined with rhubarb. If the stomach be too irritable to retain the more common purgatives, a full dose of calomel will generally be retained; but its action should be promoted by enemata (see F. 140. 144.). During the febrile excitement, and when the bowels are sluggish, the stronger saline purgatives may be given in solution, in small doses, and at short intervals, with refrigerants (F. 440, 441.). The remarks already offered upon this subject (§ 150, 151.) will guide the practitioner as to the choice of purgatives, and the extent to which they should be prescribed. In this fever, especially, it can never be injurious to give them to the extent of freely evacuating morbid accumulations in the bowels, and of promoting the alvine secretions and excretions. When the *fæces* are very offensive,

greater mischief will accrue from allowing them to remain, even for a short time, in the bowels, than from too active measures in evacuating them.

460. The remarks that have been offered above respecting *refrigerants* (§ 139, 140.), *diaphoretics* (§ 152.), and *diuretics* (§ 153.), are entirely applicable to this form of fever.—The *cold affusion*, which formerly attracted so much more, and now so much less, attention than it deserves, is more appropriate in this than in any other disease. This practice, although resorted to by the ancients and in Eastern countries, was but little known in this until it was employed by WRIGHT and JACKSON. The work of Dr. CURRIE on the subject first brought it into fashion; but now it certainly has not fashion in its favour. When the excitement is fully developed, and the heat of skin above the natural standard, when there is no sense of chilliness, and when the surface is hot and unsperspirable, the cold affusion may be employed. Dr. CURRIE directed water of the temperature of from 40° to 60° or 70°, and preferred the hours from six to nine in the evening for its use. In cases of debility, the *cool* or *tepid* affusion is more appropriate. I have resorted to cold affusion over the whole body, in several cases of fever, in a warm climate; but I was not induced by its effects to entertain a high opinion of it. The affusion of cold, cool, or tepid water on the head, when this part is prominently affected, and cold sponging the surface, are more beneficial, and admit of more general application. Dr. CURRIE believed that the general affusion had the effect of lowering the pulse and the morbid heat, of inducing perspiration and sleep, and of cutting short the fever. I have never seen it succeed unequivocally in producing the latter effects; but have remarked that the excitement returned shortly after its use. In the complication with disease of any of the thoracic or abdominal viscera, it should not be used (§ 141.).

418. *B. Of the Complications.*—*a. Predominant affection of the head* has received attention above (§ 165.). What I have there stated is applicable to this complication of common continued fever.—*Bloodletting* is especially requisite, but its amount, and the mode of performing it, should entirely depend upon the symptoms and the stage of the disease.—The *cold affusion* on the head, and *purgatives*, are the next in importance. When the cerebral affection has been preceded or attended by diarrhœa, purgatives should be prescribed with caution. Rhubarb with hydrargyrum cum creta, given so as to evacuate morbid matters, and promoted by suitable enemata (F. 140.), will be then sufficient. When *delirium* is the principal symptom, care should be taken to discriminate accurately the states of vascular action and vital power. If it be unattended by increased heat of scalp, the pulse being very quick and soft, and the countenance sunk or pale, and especially if it have followed intestinal disorder, all lowering agents should be laid aside, and restoratives with opiates, and mild nourishment in small quantities, prescribed. When fever occurs in persons addicted to spirituous or other intoxicating liquors, the cerebral affection is apt to become very severe, and to be attended with delirium and often with

tremor. In such cases, depletions should be used with caution. If tremor, irritability, &c., appear, opium, with or without camphor, should be exhibited. In other respects, the means advised in the article DELIRIUM, according to the pathological states upon which it depends, will be here appropriate. I have repeatedly seen the cerebral symptoms greatly aggravated by the application of a blister to the scalp, at a too early stage of the disease. Blisters should be applied preferably on the nape, but never on the head unless there be profound coma, or low delirium with great exhaustion of vital power, as more fully shown in the articles COMA (§ 16.), and DELIRIUM (§ 19.).

462. *b.* The observations already made respecting the *pulmonary complications* (§ 160—163.) are mostly applicable to those occurring in this form of fever. — *Bronchitis* is the most common affection, and requires the treatment above advised (§ 161, 162.). When the substance of the lungs, or the pleura, is implicated, vascular depletions ought to be early practised. But even in these cases, we should recollect, that bloodletting must be employed with greater caution than in inflammations occurring primarily and in healthy constitutions. It is in this fever, and in its pulmonary complications especially, that antimonials may be given with greatest freedom. After depletions and antimonials have been carried as far as seems prudent, blisters, or other external derivatives, should be used. If the air-passages become loaded with mucus, antimony or ipecacuanha or sulphate of zinc may be given so as to excite full vomiting.

463. *c.* *Predominant affections of the digestive mucous surface* have already received attention, and the treatment there recommended (§ 155—159.) is quite appropriate in these complications of this form of fever. — In the *gastric state* of disorder, particularly when much pain and tenderness, with irritability, exist, local depletions should be early employed; and a full dose of calomel, given shortly afterwards, will generally allay what may remain of these symptoms. Enemata, also, will assist materially in producing this effect, and evacuate morbid matters from the bowels. Small, but often repeated, doses of muriate of ammonia, or of the nitrate of potash with the sub-carbonate of soda; or camphor julap, with the solution of acetate of ammonia, and nitre or spirit of nitric æther; will afterwards be extremely beneficial. Even in this form of fever, but still more in the adynamic, we should be cautious not to be misled by the persistence of pain and tenderness at the epigastrium; or induced to prescribe too frequent or too large depletions with the view of overcoming these symptoms. They may never be removed by these means, however freely employed; for, notwithstanding the arguments of BROUSSAIS for their origin in inflammatory action, I believe that they depend more upon the altered state of the organic nervous sensibility, than upon increased vascular action in the stomach.

464. In the *enteric complication*, the treatment will depend upon the stage of fever at which it appears, and the progress it may have itself made. — Local depletions, external derivatives, and the other means enumerated above (§ 156—159.), are generally necessary. If bloody or

ochrey discharges are observed, especially late in the disease, the terebinthinate medicines, or the superacetate of lead with opium, as advised by Dr. BARDSLEY, will be found the most efficient remedies. If the powers of the system become much reduced, gentle tonics, with the chlorates, as the infusion of valerian with the chlorate of potash, and paregoric elixir, will be of essential service. The following medicines will prove of great use in earlier stages of this complication, after local depletions, especially when aided by external rubefacients and derivatives. In slight cases, either of them may be given, according to circumstances; in the more urgent, both may be taken alternately, at intervals of three hours.

No. 223. R. Sodæ Sub-carbon. gr. x.; Potassæ Nitratis gr. viij.; Tinct. Camphoræ Comp. 3j.; Mist. Camphoræ (vel Infus. Valerianæ) 3x.; Syrup. Aurantii 3ss. M. Fiat Haustus, sextis horis sumendus.

No. 224. R. Camphoræ rasæ et subactæ gr. ss.—j.; Pulv. Ipecacuanhæ Comp. gr. iv.—vj.; Hydrarg. cum Creta gr. iij.—v.; Syrup. Simp. q. s. ut fiant Pilulæ ij. vel iij. sextâ quâque horâ sumendæ.

XXII. FEVER, TYPHOID.* SYN. — *Adynamic Fever, Asthenic Fever, Febris Asthenica; Febris Contagiosa; Febris Typhoides; Typhus* (from τυφος, stupor, or τυφω, to smoulder); *Fièvre Typhoïde*, CHOMEL; *Fièvre adynamique, F. nerveux, F. ataxique*, Fr.; *Tifo*, Ital.; *Der Typhus, Nervenfieber*, Germ.; *Low Fever, Contagious Fever, Infectious Fever*.

465. DEFIN. — *After lassitude and general malaise, imperfect or suppressed vascular reaction, with depressed vital power, manifested especially in the nervous, vascular, and muscular systems, and giving rise to changes more or less evident in the circulating fluids and soft solids.*

466. This fever cannot be said to differ specifically from that last described, although certain varieties of it present very marked distinctions. Indeed, the severer forms or complications of synchoid fever very closely approach, or run into, certain states of typhoid fever; the chief differences consisting in the more sthenic vascular reaction in the early part of the period of excitement in the former. Even the milder cases of simple continued fever may gradually assume a perfectly typhoid state, in the advanced stage. The distinctions which characterise the following varieties are results of the *circumstances* already shown (§ 43.) to determine the forms and complications of fevers generally; especially of the constitution and habit of body; of the previous health and condition of vital organs; of the nature, intensity, and concurrence of the causes of the prevailing epidemic; of the influences operating after infection or during the early stages, and of the treatment and regimen then adopted.

467. *A.* The CAUSES of typhoid fevers differ but little from those of the synchoid forms. — *a.* The *predisposing causes* (§ 431.) of both are the same. Although typhoid fevers most frequently occur in persons from 15 to 40 years of age, yet the mortality, in proportion to the number affected, is much less in this than in more advanced periods of life. The predisposition to be attacked diminishes remarkably with advancing age, especially after 50; but the proportion of those who

* I use the term *Typhoid* in the same sense as CULLEN and the majority of writers on Fever in this country since his time. It is, in this sense, nearly synonymous with most of the names adduced under it.

die increases in a still greater ratio. The predisposition also diminishes as we descend from puberty to infancy, and the mortality diminishes in a still greater ratio. Thus children and aged persons are least obnoxious to typhoid and infectious fevers: a somewhat different law here obtaining from that which characterises the operation of exhalations from the soil upon the human constitution; these latter affecting the young and old as well as the middle-aged, and renewing their attacks in various forms, whilst typhus fever seldom occurs oftener than once in the same person.

468. *b.* The *exciting causes* (§ 434.) of typhoid and synochoid fevers are often the same, excepting that infectious miasms, want and famine, the various contingencies connected with the operations of war, and epidemic influences, are most concerned in producing the *severer varieties* about to be described.—The *sporadic cases* of this fever, and which generally present either the milder form, or most of the nervous character, often originate in the depressing passions, in changes from the usual habits and modes of life, or in exposure to novel influences, physical and moral; in weak delicate persons of a lax habit of body; in persons imperfectly fed, or reduced by previous disease, or by exhausting discharges, &c. From these causes especially proceed the adynamic, slow nervous, or mild typhoid fevers, often observed in persons who have recently removed into large cities, or who live in crowded, low, and ill ventilated apartments.—The *epidemic visitations* of typhoid fever are usually of the more low or severe forms described hereafter.

i. MILD TYPHOID FEVER. SYN.—*Low Nervous Fever; Simple Typhoid Fever; Simple Adynamic Fever; Regular Typhus; Slow Nervous Fever*, Huxham; *Typhus mitior*, Cullen; *Febris nervosa*, Auct.; *Languor Panonicus*.

469. *A.* This form of fever is characterised chiefly by great languor and debility; by giddiness, dulness, and confusion of intellect; by a soft, feeble, and quick pulse; and by loss of muscular power, sleeplessness, and low delirium. It usually commences with similar *premonitory symptoms* (*period of infection*, HARTMANN) to those above described. The patient complains of giddiness, lassitude, uneasiness at the epigastrium, of nausea and loss of appetite, of alternate chills and flushes, and of pain in the back and limbs,—the *period of invasion*. The chills are often prolonged, or recur for two or three days, but seldom amount to rigor. The skin afterwards becomes warm, but seldom very hot—the *period of excitement*, of irritation (NAUMANN), of *reaction* (HARTMANN), of *inflammatory irritation* (GOEDEN); the pulse frequent, full, soft, or weak; the countenance dull, pallid, and shrunk, or, occasionally, transiently flushed; the head heavy, confused, and giddy; the eye heavy and devoid of lustre; and the tongue loaded or covered with a dirty mucus. There are more or less thirst; a desire of cold, acid drink; sometimes pain at the epigastrium, nausea, and vomiting; or an irregular and relaxed state of the bowels; and offensive evacuations. Pain of the head is but little, or not at all, complained of, but that of the back and limbs is felt severely. *Tinnitus aurium* is generally present. Febrile uneasiness is great, the restlessness constant, and the want of sleep continued.—About the third, fourth, or fifth day, the head is more affected, and

the mind more confused. The respiration is short and quick; and torpor, or *coma vigil*, is often observed. Occasional flushes occur, in some cases, while the extremities are cool. The urine is pale, of a whey colour, or like small beer—occasionally scanty. The bowels are either torpid, or relaxed, or irregular; and deliquium, or faintness, partial sweats, tremors, &c. are complained of, on attempt to sit up. Delirium of a low kind, or consisting of a muttering incoherence, occurs about this time; generally, at first, during the night, but subsequently recurring during the day. The eyes become muddy, afterwards suffused or injected; and the tongue of a darker hue, dry or incrustated.

470. From the 7th to the 9th, 10th, or 11th day, the delirium degenerates into stupor—the period of *predominant narcotism* of NAUMANN—the *nervous stage* of HILDENBRAND—the *collapse* of CULLEN and HARTMANN; the pulse becomes small, weak, and very quick, or unequal; the heat of the skin natural, or diminished, or irregularly distributed; the hearing dull; and tremor, the supine posture, coma, and unconscious evacuations, are soon afterwards observed. Petechiæ sometimes appear on the trunk, thighs, &c. The tongue becomes brown or black, incrustated and fissured, is protruded with difficulty, and the gums and lips are covered by a dark sordes.—From about the fourteenth day to a much later period, according to the character of the epidemic, the peculiarities of the patient, the severity of the early stages, and the state of internal organs, a favourable change very often occurs in all the symptoms—the *stages of crisis and decline*, or of *recovery*, (HARTMANN)—and is announced by a refreshing sleep, or by a warm and general sweat, or by a gentle diarrhoea; followed by subsidence of delirium, tremor, &c.; by the tongue being moist and clean at its edges, the skin more natural, and the pulse slower; by returning consciousness; and by the improved appearance of the countenance. If these changes do not take place; or if the sweats are cold and clammy on the extremities; or if they, or the diarrhoea, be unattended by amelioration of the symptoms; a *fatal change* should be dreaded, particularly if profound coma and great deafness, subsultus tendinum, or convulsive or spasmodic movements, difficulty or inability to swallow or to articulate, hiccup, involuntary evacuations, retention of urine, tympanitic abdomen, sliding down in bed; very rapid, fluttering, or intermittent pulse; very black tongue; and a quick, jerking, laboured respiration, or other unfavourable symptoms, appear.

471. *B.* The symptoms which *distinguish* this form of fever from the synochoid are—the greater prostration of strength from the commencement; the mental torpor and confusion of ideas; the long-continued chilliness, generally without rigor or shivering, at its invasion; the moderate increase of temperature afterwards, or its natural grade; the pallid and shrunk countenance, expressive of suffering and debility; the muddy, lack-lustre eye; the torpor, giddiness, and absence of pain in the head, passing into stupor with delirium at an early stage; the quick and small, or the full, open, and soft pulse, even during the period of excitement; the early dryness, and dark appearance, of the tongue; the remarkable

foetor of the breath, and of the discharges; the supine posture; the dull, dusky, lurid, or dirty hue of the surface; the frequent occurrence of sloughs in the parts pressed upon, or of erysipelas, and occasionally of enlargement and inflammation of glands; and the early appearance of delirium, with tremor, and other symptoms indicating extreme depression of vital power. When any of these phenomena occur in synchoid fevers, it is always at a far advanced stage; the synchoid thus merely lapsing into the typhoid form, owing to various contingent influences, or to predominant affections of particular organs.

472. *C.* Such are the usual progress and characteristic phenomena of simple typhus; but it presents slight modifications, with the activity of reaction in the early stage, with the affection of particular organs or of the skin, and with the character of the prevailing epidemic. When the predominant affection is either so evident or so influential, as to modify materially the state of disease, certain varieties result, which have been described by authors as specific or distinct forms of fever, and have been often connected, in too absolute a manner, with the peculiar circumstances in which they were observed, or in which they originated. I shall here notice these varieties, with reference to the circumstances whence their peculiarities seem to proceed, and to the various names imposed upon them from a desire of appearing original, but with the effect of proving inaccurate or of causing misapprehension and confusion.

473. *ii.* COMPLICATED TYPHOID OR NERVOUS FEVER. — *A.* *With predominant Affection of the respiratory Organs.* — The bronchial surface is the part chiefly affected, and is rather congested than inflamed. The pleura is rarely attacked; but the substance of the lungs is sometimes implicated; and it then commonly becomes rapidly infiltrated or condensed, a fatal result quickly supervening. This complication is often obscure, or even latent; but it generally admits of detection by auscultation, or by attentive observation alone. The patient sometimes complains of stricture, oppression, or dyspnoea, but very seldom of pain in the chest. The respiration is short and hurried, is attended by the mucous rattle, and with more or less cough. The skin is seldom hot; at a later period it is cool, or even cold, in the extremities, and dusky or lurid; the cheek is tinged with a dark red, and often assumes a livid or purplish hue. The pulse is rapid and weak. The confusion or stupor of an early stage passes quickly into low, incoherent, muttering, and coma. The tongue becomes very dry, black, crusted, and fissured; it cannot be protruded, and articulation is lost. This state may continue for several days, with unconscious evacuations, and all the nervous symptoms prominently marked; at last the patient sinks asphyxied, the changes necessary to life ceasing to take place in the blood sent to the lungs.

474. *B.* *Nervous or Typhoid Fever with prominent Affection of the digestive mucous Surface* — the *Adynamic Fever* of several French writers; the *Dothinentérie* of M. BRETONNEAU. — Many of the observations made respecting this affection in synchoid fever (§ 452.), apply to its occurrence in typhoid fevers. It is very commonly observed in large cities, and in circumstances that occasion the use of water containing animal matter in a state of

decay; and it commences in a similar manner to the other varieties of typhoid fever. The symptoms that usually attend its progress are — a tumid, tense, hard, or tympanitic state of the abdomen, at an early stage of the fever, frequently without pain or even tenderness on pressure, but with involuntary stools, and unconsciousness of their passage at a later period. The tongue is dry, black, incrustated, and the crust sometimes fissured; but it occasionally is dark red, dry, and devoid of papillæ or fur. The stools are often ochrey, and more frequent than natural. Discharges of blood, in greater or less quantity, sometimes accompany them; but the hæmorrhage, and the changes in the mucous surface occasioning it, may occur without much, or even any, relaxation of the bowels.

475. *C.* *Typhoid Fever, with prominent Affection of the cerebro-spinal nervous System* — the *Ataxic* of PINEL — is seldom attended by acute pain in the head. But heaviness, stupor, confusion, and giddiness are felt severely, and very early in the attack. The eyes are injected, suffused, and devoid of lustre. Delirium appears early, and frequently becomes more violent than in mild typhus; the patient attempting to get up, or out of bed. The scalp is warm, or hot, and the extremities are often cool. Insensibility and coma quickly supervene, and are sometimes attended by spasmodic contractions of the muscles of a limb, or by partial convulsions. Inability to swallow, retention of urine, and loss of speech are occasionally observed. Startings of the tendons, relaxation of the sphincters, and failure of the circulation occur in the last stage, and usher in a fatal termination. This complication is especially characterised by the early appearance and the severe form of the symptoms depending directly upon the state of the cerebro-spinal nervous system.

476. *D.* *Typhoid or Nervous Fever with severe Affection of several vital Organs* — *Typhus gravior* of CULLEN and others — is generally characterised by intense disorder of the brain and digestive canal, with more or less evident affection of the bronchial surface; delirium being early, and at first somewhat violent, and soon followed by insensibility, &c. The pulse is quick and weak; the skin is hot, dry, pungent, or harsh, in an early part of the stage of reaction, but it generally becomes cool, particularly in the extremities, and often discoloured; respiration is panting or quick; the tongue dry and black; the abdomen tumid, tender, or tympanitic; and the stools are dark, offensive, and passed involuntarily and without consciousness. In this form there is some degree of reaction, expressed most severely in the digestive canal and cerebro-spinal nervous system; but it is characterised by depression of vital power, that is soon increased by the exhaustion consequent upon the reaction induced in this state.

477. The vital organs may, however, be severely affected, although excitement be very slightly, or even not at all, manifested. Such cases constitute the *Congestive Typhus* of some modern writers, — a form of comparatively rare occurrence, unless accompanied with petechiæ and other symptoms indicating serious changes, not merely of vital action, but also of the fluids and soft solids. — In this variety, the depression of

vital power is extreme from the commencement, and such as prevents the development, and, in some cases, even the least manifestation, of excitement. The causes of the disease have given vitality a shock beyond its powers of resistance, or of recovery. Muscular power is almost entirely annihilated, and the anxiety at the epigastrium and præcordia is extreme. Respiration is oppressed, and the pulse is quick, sometimes irregular, intermittent, or even slow, and always small, weak, and thready. The countenance and eyes at first have an intoxicated appearance: the former being pallid, occasionally slightly bloated, or livid and dingy; the latter being vacant or suffused, and, afterwards, injected, ecchymosed, half shut, or open. The skin, at an early stage, is warm or harsh; subsequently it is cool, withered, lurid, and, sometimes, studded with petechiæ or vibices; the extremities being cool, or even cold, and dingy, or of a leaden hue. The mind is very much confused at the commencement, and soon passes into a state of incoherence, delirious muttering, and coma. The patient is unable to protrude the tongue, owing to deficient power of the muscles of the organ; and seldom complains of thirst. The abdomen is tumid or inflated; the bowels being relaxed, the stools black and offensive, and, with the urine, passed unconsciously. The progress of the disease is usually rapid, and generally to a fatal termination; but the *premonitory stage* may be protracted, although severe — the *invasion* being sometimes sudden, and resembling an apoplectic seizure. If the powers of life rally, recovery may take place; but it is tedious, and often attended by various consecutive disorders.

478. *E. Of other Modifications or peculiar States of Typhoid or Low Nervous Fever.* — Various phenomena beside those already described may accompany this fever, according to the combination and intensity of the causes, the previous health of the patient, and the circumstances affecting him subsequently to the operation of the exciting agent. — *a.* When caused by *mental distress, despondency, &c.*, this fever presents certain peculiarities deserving notice. The patient is dejected, indolent, and incapable of exertion. He loses his appetite and strength; he cannot rest at night, or his sleep is disturbed and unrefreshing; and he complains of headach, and of many of the symptoms of a common cold. He is absent, his mind being constantly occupied with the subject of his misery. His countenance assumes an anxious appearance; his healthy looks vanish; and his absence of mind often passes into a state of reverie. After several days, manifest affection of the brain is observed, with characters varying with the age, strength, condition, and habits of the patient. In the robust, plethoric, and in persons addicted to intoxicating liquors, it is sudden and violent in its accession; the headach and despondency quickly passing into delirium of an active and constant kind — the patient calling out, or starting up, and attempting to get out of bed. The pulse is quick, firm, and oppressed, or small; sometimes soft or irregular. Muscular power is not so much, nor so early, reduced as in the other states of the disease, but there is continual jactitation. In the debilitated, the aged, or the ill-fed, the cerebral affection is

less violent in its attack, and commences more gradually, often attended by red or suffused eyes, or by catarrhal symptoms, or by diarrhœa; by delirium, tremor, great prostration of strength, hurried breathing, weak quick pulse, subsultus tendinum, and, sometimes, with a mottled appearance of the surface. In other respects, the progress of the disease is nearly the same as the more severe cerebral complications already noticed (§ 475.), but it much more frequently terminates unfavourably.

479. *b.* In some cases the fever is complicated with *sore throat*; and this symptom is occasionally so severe and early as to resemble an attack of *cynanche maligna*. Indeed, cases not infrequently occur, which fully indicate that the one disease may pass into the other, under favourable circumstances in respect of predisposition and concurrence of the exciting causes; or, in other words, that in young persons, in those predisposed to sore throat, and in cold and humid states of the air, certain of the exciting causes of typhoid fevers will sometimes occasion a malignant or putrid inflammation of the throat, ushered in and attended by this form of fever; or they will, in such or similar circumstances, produce a low fever, in which inflammation of the throat is a contingent complication, and assumes an asthenic or unfavourable character, owing to the depressed state of vital power, and morbid condition of the circulation, in which it occurs. This complication is observed either as the most prominent local affection, or in conjunction with some other remarkable disorder, especially with the gastric complication. In some instances, it is very severe; the pharynx and upper part of the œsophagus being also more or less affected, and deglutition altogether prevented.

480. *c.* *Paralysis* may occur, especially in the cerebral state of this fever; and, in this case, the use of one side of the body is generally lost. If the patient recover from the fever, the functions of the paralysed side are often gradually restored. This complication may take place in those cases which commence with protracted or severe premonitory symptoms, against which the patient struggles, until he falls down from exhaustion; or is *suddenly* seized, as in a case of apoplexy — the fever running its course, as after the usual invasion, with chills, rigors, vomitings, &c. When the disease is developed in this sudden manner, it commonly presents the cerebral character throughout, with delirium, passing into coma, &c. In a case, however, of this kind, the cerebral symptoms were subsequently slight, and the disease mild.* In some of the cerebral cases of this fever, the affection of the mind continues for some days, or even weeks,

* A young lady went some distance to visit an intimate friend, delirious in fever; and having gone into the chamber, she was sensible of a disagreeable odour upon the curtains of the bed being drawn. She soon afterwards complained of slight nausea, of headach, loss of appetite, and general lassitude. These symptoms continued gradually to increase for six days, during which time she kept about. On the morning of the seventh day she suddenly fell down without sense or motion. I saw her in this state soon afterwards, and, viewing the attack as the result of sudden congestion of the brain, and before I had learnt the above particulars, I prescribed a moderate bloodletting, and purgatives. The functions of the brain soon returned, and the fever ran its course in a mild form, and without delirium or prominent affection of any organ.

after the bodily functions are restored. Instances may even occur of permanent insanity being the consequence. But, in all such cases, hopes of recovery should be entertained until some weeks, or even months, have elapsed from the disappearance of the fever.

481. *d. Relapses* are not infrequent after the mild forms of typhoid fever; especially when the duration of the disease has been shortened by the treatment, or its course materially altered. They are also much more common in one epidemic than in another. In many instances, particularly when the procession of the morbid phenomena has been interrupted by large depletions, or drastic purgatives, the symptoms become ameliorated for a time, but recur with their previous severity; the recurrence being different from a relapse.—This fever, especially its gastric and enteric states, may pass, or be converted, into a low or typhoid form of *dysentery* (see that article, § 26, 27.), owing to the influence of the same circumstances that usually cause relapses; especially premature exposure in early convalescence; the use of too much, or of improper, food; the continued operation of the exciting causes; a close, impure, and infectious air; and suppression of the excretions.—*Local affections*, particularly *inflammations*, may also appear during convalescence, arising either from the above causes, or from atmospheric vicissitudes; or from whatever may inordinately affect the nervous and vascular systems. In these cases, the inflammation is apt to pursue a severe and rapid course, owing to the unfavourable or debilitated state of constitution in which it occurs. Bronchitis, often associated with affection of the substance of the lungs, and inflammation of the mucous surface of the bowels, sometimes with softening and enlargement, or ulceration, of the mucous follicles, are the most common diseases thus contingent on convalescence. Inflammatory affections of the stomach or liver may also take place. When the mucous surface of the intestines is the seat of consecutive disorder, the bowels generally are more or less relaxed, and the stools are of an ochrey hue, and offensive. In such cases, the follicles are especially affected; are often ulcerated; and, although they will generally heal under judicious treatment, perforation of the intestines and fatal peritonitis may be the result at a period more or less remote from the disappearance of the fever.

482. *F. Of Petechiæ and exanthematous Eruptions in Typhoid Fevers.*—Nervous or typhoid fevers may occur sporadically or epidemically, without any *petechial* or other eruption; or may be attended by *petechiæ* or *vibices* in their progress, and particularly at an advanced period, or by an *exanthematous eruption* at an earlier stage; or even by both kinds of cutaneous affection, either successively or almost coëtaneously. For many years, or in successive epidemics, or even in a single epidemic, typhoid fever may appear in any one or more of the states just described; or it may assume either of these forms, associated with one or other, or with both, of the affections of the skin just mentioned in a portion of the cases only; or the affection of the skin may be one of the most unvarying and chief characteristics of an epidemic: and, of the cases composing such an epidemic, some may be of

the mild, others of the complicated or severe form; some may evince more or less reaction or excitement, others may present depression of the powers of life and congestion, as prominent phenomena throughout. The above description, although applicable more especially to the occurrence of typhoid fever, independently of any marked affection of the skin, yet does not the less apply to the occasional association of the disease with this affection. Those epidemics, in which the changes in the skin are very constant phenomena, sometimes possess other characters, both in the early and in the advanced stages, that require an especial notice. Whilst these changes—both *petechial* and *exanthematous*—have been considered by HILDENBRAND, NAUMANN, FODÉRÉ, PEEBLES, and other experienced writers, as indications of specific kinds of fever, which, in the early stages, may present more or less either of inflammatory excitement or of depression of vital power; they have been viewed, by many authors, merely as occasional occurrences, or as modifications met with only in certain epidemics, and not as characteristics of distinct varieties.

483. In trying to solve this question, the same difficulties present themselves that arise in all attempts to arrange the different varieties and states of fever in such an order as the more constant phenomena may warrant, and as may conduce to appropriate and successful methods of treatment. If I refer to my own observations, in different parts of the Continent, some time after the late war, and in various parts of this country, both before and subsequently, I shall find—1st. That *petechiæ* and *vibices* were either seldom or rarely seen for several years, and in some epidemics, excepting in the most severe or malignant cases, or when favoured by a too stimulant treatment, and a too heating regimen, during the early stages; and that, at other times, they appeared more frequently in the advanced periods of the lowest forms of fever, and even, although much more rarely, towards the termination of synchoid fever, when antiphlogistic remedies had been neglected in the stage of excitement.—2d. That this change, in some epidemics, was a very common or even general symptom, occurring in mild as well as in severe cases, although presenting very different appearances in each; and that they were sometimes observed early in the low states of fever, particularly when caused by unwholesome and deficient food, by a foul atmosphere, or by infectious miasms.—3d. That they were very frequently connected, especially in the plethoric, in the previously unhealthy, and in persons using much animal food, with evident change of the circulating fluids, with predominant disorder of the digestive organs, with a soft, broad, and open pulse, and with hæmorrhages from the intestines, and a tendency to disorganisation of the mucous surface of the bowels.—4th. That an *exanthematous rash* or eruption was observed in some epidemics, from the third to the eighth day of the fever, was quite distinct from *petechiæ*, generally appeared earlier, and was, in some cases, either associated with, or succeeded by, *petechiæ* or *vibices*, or even both.—5th. That this exantheme was of a reddish colour, varying in deepness, and rarely passing to a dark hue; that it occurred in cases characterised by vascular reaction in the early stage, as well as in

those of a very low grade—in the mild, in the complicated, and in the severe; that this eruption was most probably overlooked in many cases where it existed; and that it was very generally confounded with petechiæ, owing to its late appearance, or to its colour changing, in a somewhat similar manner to petechiæ, with the states of vital power and of the circulating fluids.—6th. That although the difference between both these affections of the skin has been insisted on by HILDENBRAND and NAUMANN, it has been too widely drawn by them, and without due reference to the occasional association of both affections. From these facts, therefore, I am induced to come to the conclusions above stated (§ 482.); and, conformably with the views of the experienced writers just mentioned, to notice more particularly the states of fever in which these changes in the skin are observed, without considering these states as always constituting distinct species.

iii. TYPHOID FEVER, WITH PUTRO-ADYNAMIC

CHARACTERS. SYN.—*Putro-adyamic Fever*,

Σύνυχος μετὰ σπυεδίνος, Galen; *Synochus Putris*, S. cum Putredine, *Febris continua Putrida*, Rivière; *F. continens Putrida*, Selle; *F. Putrida sanguinea*, Vogel; *F. colliquativa putrefaciens*, Quesnoi; *F. Hungarica*, *F. nervosa-putrida*, *F. asthenica*, *F. contagiosa*; *F. colliquativa essentialis*, Borsieri; *F. Putrida simplex*, Richter; *F. caractere putrido aut septico*, Hildenbrand; *F. Petechialis*, *F. Nosocomialis*, *F. Castrensis*, *F. Purpurata maligna*, *F. Maligna*, *F. Carceraria*, *Pestis Bellica*; Auct. var.; *F. Continens maligna*, Huxham; *Das Faulfieber*, *Faulige Fieber*, Germ.; *Fièvre grave*, *F. Maligne*, *F. Putride*, F.; *F. Adynamique*, Pinel; *Febbre Putrida*, Ital.; *Morbo Petechiale*, Cerri; *Febbre Petechiale*, Rossi; *Febbre epidemica Petechiale*, Buffa; *Petechial Typhus*, *Camp Fever*, *Jail Fever*, *Putrid Fever*, *Putrid Malignant Fever*, *Spotted Fever*.

484. Conformably with what I have stated above, I consider this as a variety merely of typhoid fever; its especial characteristic—the appearance of petechiæ and vibices—being contingent upon certain circumstances and causes tending to contaminate the circulating fluids, and to destroy the tonic and irritability of contractile tissues, and appearing only as the effect of a series of anterior changes. Although petechiæ may occasionally appear in the advanced stages of other fevers, particularly those of the typhoid form, yet in those epidemics which result from famine, war, unwholesome food, and from air loaded with putrid animal and vegetable matter, or with the emanations proceeding from a number of persons shut up in a close atmosphere—causes which are often conjoined—this symptom is very generally, if not constantly, observed, and is only one of the indications of the very serious changes which have taken place, not only in the blood, but also in the soft and irritable structures of the frame. Infection, either directly or by fomites, is, however, the chief cause, although cold, humidity, fear of the disease, and the other agents just noticed, may either generate the fever *de novo*, or predispose the system to infection, or aid its operation after exposure to it. Although certain epidemics evince a putrid or septic character at an early period, and thereby justify the appel-

lation generally given to them; yet this character is seldom primary, or otherwise than the consequence of suppression or exhaustion of vital power, the fever commencing in some one of the forms already described. Indeed, there is no variety of fever that may not evince a septic or putrid state—1st, from the vital depression produced by the exciting cause; 2dly, from exhaustion consequent upon vascular reaction; 3dly, from the passage of contaminating matters into the blood; and, 4thly, from these states conjoined. Hence, when the causes are of a contaminating kind, and the influences continuing to operate after infection have a similar tendency, putrid or malignant symptoms will arise, whether the fever be synchoid, nervous, typhoid, or gastric, in its early periods. These fevers are the most prone to the septic character; but others, as remittent, inflammatory, and bilious fevers, may also assume it. This particular character may, or may not, be developed, or may appear at a later or earlier period, owing to the nature and diversity of the causes; to the condition of the internal functions and of the circulating fluids at the time of attack; to the rigidity or tone, or to the laxity, of the softer solids; to the violence or absence of vascular reaction; and to the early treatment and regimen.

485. A. Petechial, or putro-adyamic fever, generally commences with the premonitory and invading symptoms usually observed in other fevers of a low grade. When an epidemic presents changes of a septic or putrid nature, as predominant features, the early stages of the fever vary most remarkably according to the intensity of the causes, and the state of the patient. The period which elapses from infection till the manifestation of the disease ranges from a few hours to five or six weeks. It is commonly some days, but sufficient evidence has been furnished, in the Irish and other epidemics, that the longest of these periods may occur. During the time the disease thus takes to form, the usual premonitory symptoms are observed, and increase until chills, horripilations, or rigors are felt. In some instances the disease commences insidiously, with or without catarrhal symptoms, becoming gradually severe and dangerous. In these, it is often difficult to assign the exact period of attack. Fatal cases most frequently begin in this manner, especially in the plethoric, cachectic, and persons accustomed to full living. In others, after a protracted and severe premonitory stage and indistinct symptoms of invasion, the fever proceeds with indications of imperfectly developed reaction, and soon assumes a putrid or malignant form. In some cases, rigors and shiverings sufficiently evince the period of attack, and quickly give rise to inordinate reaction, followed by exhaustion and evidence of change in the fluids and soft structures. Amongst the most constant of the early symptoms are—dull pains in the head, occiput, back, and limbs; universal weariness, soreness, and loss of muscular power; confusion of mind; pains in the joints and limbs resembling rheumatism; frequent sighing; nausea or vomiting; and noises in the ears.

486. The pulse, when reaction is developed, is full, open, quick, sharp, but soft and easily compressed. Respiration is laborious, suspirious, with oppression or anxiety at the præcordia and epigas-

trium. Burning heat is often felt internally, and on the surface of the trunk. When reaction is either imperfect, or does not take place, the pulse is slow, or not more frequent than usual, is weak and compressible, sometimes unequal or intermittent; and the temperature is little or not at all increased, or it is unnatural. The tongue is either loaded and furred, or flabby and covered with a dirty mucus. Thirst is generally urgent. The vascular excitement usually continues, in various grades, from six to eight days; and as it passes its acme, or about this period, purplish spots, of the size of flea-bites, and of various shades of deepness, appear upon the neck, breast, and insides of the arms and thighs. The pulse becomes more soft and weak; sometimes unequal and small. The tongue is more loaded, and of a darker colour. Thirst is diminished, or is not complained of; and the excretions present a very morbid appearance, and an offensive odour. To these are added dulness of all the senses, or delirium, alternating with stupor, difficulty of articulation, and often also of deglutition, leipothymia, faintness, and tremors. From the eleventh to the seventeenth day, but frequently earlier, the abdomen becomes tympanitic, if the disease proceeds *unfavourably*; the petechiæ are of a darker colour; vibices or blotches appear on the extremities; profuse fœtid perspirations break out without relief; the posture is constantly supine; parts pressed upon quickly sphacelate; the temperature sinks often below the natural standard; and the tongue is now black, fissured, or flabby, clean, dark red, or livid. Coma; subsultus tendinum; convulsions; hæmorrhage from the bowels; or exudations of a sanious fluid in the evacuations, or from the gums, lips, and nostrils; also take place towards the close.

487. A *favourable* change most frequently occurs from the ninth to the seventeenth day, and is indicated by profound sleep; by a warm, soft, and moderate perspiration; by turbid urine; by natural stools; and by a brighter colour, or disappearance, of the petechiæ.—The *duration* of this fever is seldom longer than twenty-one days; but it may terminate on any intermediate day between the sixth and twenty-fourth. A fatal issue occurs most frequently from the eighth to the fourteenth.—Towards the close of an epidemic, the usual course is often departed from; mild cases of short duration, and *relapses*, amongst these especially, being very common. When mercury has been given so as to affect the mouth, a crisis is prevented, and convalescence is protracted.

488. *B. Modifications.* — *a.* Such is the more usual course of the disease, particularly as observed in modern times. But it presents various grades of severity, and several modifications and complications. It is in some cases, even in the same epidemic, comparatively mild; yet presenting manifest signs of colliquation, or of a septic tendency, particularly as respects the state of vital power, the circulating fluids, and the appearance of the petechiæ. In others, the attack is violent from the commencement, and the symptoms intense; diminution of the vital cohesion of the tissues, and dissolution of the fluids, appearing early and proceeding rapidly. In many, the invasion is gradual, or much less tumultuous, than in these; the progress is more insidious, and the results are not less dangerous. In both, the body undergoes

decomposition soon after death, and the rigidity usually observed *post mortem* does not take place.

489. *b.* When this fever is epidemic, petechiæ may appear as early as the third, fourth, or fifth day from the attack, in mild as well as in severe cases; and a white miliary eruption may break out at a late stage, particularly when the perspirations are copious. Yellowness of the skin, or purplish colour of the extremities, or enlargement and inflammation of the glands in the neck or groins, may occur in an advanced period. Pimples may also appear on the surface, and may be considered a favourable indication. Although delirium and insensibility generally follow the headach of the early stages, yet the mind may be serene and unaffected throughout—even to the moment of dissolution. In cases which present no distinct sign of invasion, nor of reaction, but proceed insensibly to a general colliquation of the fluids and solids, the excretions, both cutaneous and intestinal, are generally abundant and very offensive; the flow even of urine being sometimes excessive. The tongue is occasionally natural; or it is clean and raw-like; or as if streaked with blood, or with a bloody sanies. An aphthous state of it, and of the lips, is also sometimes remarked.

490. *c.* In persons who live fully and luxuriously, particularly if they have passed their thirtieth year, this fever often proceeds in an insidious but fatal manner. Such patients do not complain of pain, or of much uneasiness; although they are remarkably debilitated and depressed. Their manner is somewhat hurried, but their intellect is clear. The skin is greasy, and covered with dun petechiæ, sometimes intermingled with white miliary vesicles; its temperature is low; the countenance slightly suffused; the eyes glassy; the tongue sometimes loaded or crusted, or clean and moist; thirst is often absent, and the pulse but little accelerated. Convulsions are frequent; and a fatal termination often ensues, mostly before the fourteenth day.

491. *C. Complications*, similar to those already described, may take place in the early stages of this disease.—*a.* The *catarrhal, bronchial, and pulmonary complications* are most common in winter. When the bronchi and lungs are seriously implicated, the respiration is short, hurried, or laboured; cough is frequent; and the sputum is bloody, rusty, or consists of a dark, sanious matter, particularly in the latter stages.—*b.* The association with *cerebral affection* is very frequent, particularly in the strong and plethoric, and in persons whose minds have been much harassed previously to the attack. These latter seldom recover from it. In this state the headach is severe from the commencement; the eyes are injected or suffused; reaction is more or less energetic, and is often attended by epistaxis, which, however, is never critical. Delirium, insensibility, subsultus tendinum, &c., are common phenomena in the latter stages of unfavourable cases.—*c.* The *digestive canal and liver* are chiefly affected in summer and autumn; the fever assuming gastric and bilious characters at its commencement, with bilious vomitings, &c., but soon passing into the putrid state. The enteric and dysenteric states are also frequent, especially at later periods of the disease. The *enteric* is the most dangerous of the abdominal complications,

particularly when the petechiæ, or vibices, are of a dark, or deep purple colour; the abdomen tympanitic; and the stools are green, livid, or black, mixed with dark fluid or grumous blood. In these, fatal hæmorrhages sometimes occur. The dysenteric state may take place in mild as well as in severe cases, at an advanced stage; with severe gripings, and dark sanious, bloody, and mucous stools, which are very foetid and infectious. The disease may thus pass into the adynamic form of dysentery. This change was common in the epidemics lately prevalent in Ireland. — *d.* The complication with inflammation of the *fauces* and *pharynx*, or with putrid sore throat, is sometimes observed, and is to be distinguished from primary *cynanche maligna*, by its occurrence in the course of the fever, or as a contingent affection (§ 479.).

492. The *sequelæ* of this fever are sometimes serious. They consist chiefly of dysentery, chronic diarrhœa, dropsies and œdematous swellings of the extremities, pulmonary consumption, hepatic obstructions, mania and other forms of insanity, abscesses in various parts of the body, sloughing sores, inflammation of veins, particularly of those of the extremities, gangrene of the feet, rheumatic affections, &c. Most of these result in great measure from the changes that have taken place in the blood during the fever; these changes affecting the blood-vessels, and organs most susceptible of congestion. — *Relapses* are frequent in cases of short duration, and in those which have been apparently cut short by active treatment; and are generally more dangerous than the first attack. They are more common in males than in females; and towards the close of an epidemic, than at its commencement.

493. *D. Diagnosis, or the Changes which more especially constitute Malignancy or Putro-adynamia in Fevers.* — *a.* The *secretions*, next after the state of vital power, indicate incipient dissolution of the vital cohesion of the blood and soft tissues. — The *urine* has first a more viscid and albuminous appearance than usual. It is frothy, browner, and less transparent. If this pathological condition increases, the urine becomes brown, or dark brown, clouded, turbid, muddy, and often deposits a brown sediment. It quickly becomes putrid or offensive. — The *feces* are foetid, or have a putrid smell — are dark, fluid, ochrey, or contain blood. — The *sweat* is thick, clammy, sometimes cold, copious, and always offensive; and occasionally it imparts an ichorous stain to the linen. — The secretion poured into the mouth is a thick, viscid, slimy, dirty mucus, of a dark brown colour, that collects over the teeth, edges of the tongue, and lips.

494. *b.* The changes observed in the *vascular system* are — an open, broad, soft, compressible, undulating, or unequal, or a very quick, small, thready, and irregular pulse; a more than usually dark appearance of the superficial veins, or dark streaks in their course; and, at an advanced stage, exudations of dark, dissolved, or thin blood, or of a bloody sanies, from the outlets of canals, as the mouth, nostrils, anus, vagina, &c. — Blood taken from a vein, even previously to the occurrence of these signs, is very dark, thin, sometimes of a black purple hue; and either does not separate into coagulum and serum, or coagulates into a soft, pultaceous, or gelatinous

mass, with imperfect separation of the serum. The fibrinous and albuminous constituents are deficient; and, owing to this circumstance, together with the want of vital power in the vascular system, the coagulum wants cohesion, the least agitation causing a partial admixture of red particles in the surrounding serum. — As the dissolution of the vital cohesion of the circulating fluids and softer solids proceeds, the colouring particles of the blood often fall to the bottom of the vessel, or of the gelatinous coagulum, leaving the upper stratum, and the surrounding serum, of various shades — sometimes of a greenish, purplish, or reddish hue. LANGRISH, HUXHAM, FORDYCE, HILDENBRAND, and others, have noticed a peculiar putrid odour of the blood when taken from a vein. (See BLOOD, § 110. *et seq.*). This fluid soon undergoes putrefaction after its removal from the body. It presents, however, various anomalies, in particular cases, or in some epidemics; but it seldom evinces very remarkable alterations, excepting as the grosser and more palpable results of anterior changes, which, although evidently of a most important kind, admit not of precise recognition; nor do those alterations occur until the symptoms indicate depression of constitutional power, imperfect assimilation of absorbed fluids, and lesion of the depurating functions. In connection with these changes, particularly those of the blood, the tonicity, or vital cohesion, of the extreme capillaries and softer solids are very much impaired, occasioning thereby further alterations. The functions of the cerebro-spinal nervous system are often more or less disordered, as in low nervous fevers; and the states of the mucous and cellular tissues, and of the skin, are remarkably altered. The cellular tissue becomes flaccid, softened, or less coherent, and consequently slightly tumid; and hence the bloated appearance in extreme cases; or cachectic fulness of the surface, in the most fatal states of the disease. The mucous tissue is discoloured; it exhibits a dirty brown, or grey, or livid hue, with black ecchymosed spots.

495. *c.* The *cutaneous surface* is at first merely dusky or lurid. But as vital power is further depressed, a bluish, marbled discolouration is sometimes observed in the shape of veins. *Petechiæ* of various depths of shade, from a lively or dark red, to a purplish or brown colour, appear principally upon parts usually covered by the clothes. They are either alone, or attended by the exanthematous eruption characterising the variety next to be noticed (§ 497.), or by dark or purplish spots of various sizes. In some cases, the skin, especially that of the extremities, becomes of a dark purple colour. When there is much heat of surface in the early stage of excitement, a caustic or morbid sensation is imparted, which increases whilst the hand remains in contact with it. When copious sweats follow, a white miliar eruption, intermingled with petechiæ, or vibices also, sometimes is observed. As the temperature is reduced, an unpleasant raw, cadaverous, or cold feeling is imparted to the hand of the examiner; and the petechiæ often become much darker, or more numerous, or aggregated, or almost confluent in some parts. In such cases, *passive hæmorrhages*, particularly from the bowels, are not uncommon; but they may also occur without much change in the skin. The

integuments readily sphacelate from slight injury, irritation, or pressure; and may even be the seat of sphacelating sores or carbuncles in extreme cases.—Enlargement or obstruction of the lymphatic glands, with a tendency to asthenic inflammation and disorganisation of the surrounding cellular tissue, is sometimes seen in the most malignant cases; but these changes take place most remarkably in *plague*, which has been considered by many able writers as a modification merely of this fever—the one disease running into the other. (See the article on that disease.)

496. As to the *causes* of, or pathological states giving rise to, the septic or putrid changes in the fluids and solids, observed more remarkably in some fevers than in others, even the most experienced writers are not agreed. There can be no doubt that these changes should be referred chiefly to the depressed state of organic nervous or vital power, and to the consequently imperfect functions of assimilation, excretion, and depuration, as insisted upon above (§ 102.), and in the article BLOOD. But the direct introduction of putrid animal or vegetable matter into the circulation, in considerable quantity, so as to depress the vital influence below the power either of salutary reaction or of excreting it through the emunctories, will so contaminate the whole mass of fluids, as to give rise to alterations and appearances very similar to those just described, and to many of the more intense symptoms previously noticed as depending chiefly upon the state of the cerebro-spinal system (§ 491.). The experiments made by GASPARD, MAGENDIE, and others (see *Lond. Med. Repository*, vol. xvii.), have proved this fact; but changes quite as malignant, as in the fever now being considered, and in plague and yellow fever, take place without any very manifest or demonstrable source whence they could have proceeded. In such cases, numerous facts and circumstances concur in showing that a morbid seminum—an infectious miasm—proceeds from the bodies of those already affected, and, through the medium of the inspired air, contaminates the blood as it circulates in the lungs, and affects the organic nervous influence. It may also be admitted, that miasms proceeding from animal and vegetable matter in a state of decay—from a number of persons breathing the same atmosphere—from those shut up in close, warm, and ill-ventilated places—will produce a similar effect, and generate a malignant fever *de novo*, which will be capable of propagating itself by means of the emanations evolved in its course.

iv. TYPHUS. SYN.—*True Typhus*; *Nervous*

Fever with exanthematous Eruption; *Contagious Typhus*; *Febris nervosa epidemica*; *F. nervosa exanthematica*; *F. maligna cum sopore*, Rivière; *F. Contagiosa*; *F. nervosa petechialis*; *F. pestilentialis Europæ*; *Typhus Contagiosus exanthematicus*, Hildenbrand; *T. Castrensis*, Boerhaave; *T. Gravior*, Cullen; *T. nostras*, *T. Europæus*; *T. Communis*, *T. Bellicus*; *T. Contagiosus*, Naumann; *T. Exanthematicus*; *Pestis Bellica*; *Der Ansteckende Typhus*, *Das Ansteckendefieber*, *Das Exanthematische Nervenfieber*, Germ.; *Die Kriegspest*, Hufeland; *Das Fleckfieber*, Reuss; *Typhus Contagieux*, *Fièvre d'Hôpital*, Fr.; *Fièvre adynamique ataxique*, Pinel; *Tifo Contagioso*, Ital.

497. This fever is characterised by phenomena

which distinguish it from the foregoing varieties;—by *catarrhal* and *gastric symptoms early in the disease*; by *stupor*, *delirium*, or *typhomania*; by a *peculiar cutaneous eruption*; by *more or less evident affection of the liver*; and by the *determinate course and regular succession of all the febrile changes*.

498. *True or contagious typhus* has been confounded with *synchoïd* and *nervous fevers*, on the one hand, and with *putrid* or *malignant fever*, on the other. It has been already stated, that putridity or malignancy not only may characterise a particular form of fever or certain epidemics, even at an early period of their course; but also, owing to various contingencies, may take place in advanced stages of any other fever. As the circumstances favouring the generation and spread of typhus are often such as also tend to develope those changes which have been usually named putrid or malignant, and as these changes are frequently observed in the latter stages of typhus—the symptoms distinguishing this fever becoming associated with, or followed by, those indicating the putro-adyynamic state—so has it been often confounded with other fevers, in which this state has predominated more or less. If we refer to the numerous histories of epidemic typhus recorded by writers from the close of the fifteenth century up to the present time, or even to the brief abstracts furnished by M. OZANAM (*Hist. Méd. des Maladies Epidémiques*, &c. t. iv. p. 155. *et seq.*), we shall find, that although many of these, owing to the concurrence of circumstances developing a putrid or malignant disease, were instances of fever, either identical with, or very closely resembling, that which I have described as such in the preceding section; yet many others—or even the majority—were true typhus in which the putro-adyynamic state was either early or prominently developed; the exanthematous eruption characteristic of typhus being succeeded or accompanied by the petechiæ indicating the approach of the septic condition, and being either mistaken for them, or for an eruption of miliaria. Owing to this circumstance especially, typhus, low nervous, and putrid fevers have been very generally confounded together. The essential characters of typhus were first distinctly traced by SAUVAGES; but CULLEN mixed them up with the symptoms of those forms of low nervous or typhoid fever which occur sporadically. Even among modern writers, comparatively few have made the distinction, excepting HILDENBRAND, FODÉRÉ, NAUMANN, PEEBLES, and some others. True or contagious typhus has not been epidemic in England for many years; or, if it have appeared in a few places, it has not extended beyond them. In Ireland, however, it was extensively prevalent, particularly in the years 1817, 1818, and 1819; and in some parts of Scotland since that time. The fevers most commonly observed in England, and particularly in London, have been either synchoïd, simple, or complicated; or low nervous fever variously associated, and but rarely displaying a predominance of putrid or septic characters.

499. True typhus, although prone to assume a septic condition, especially when epidemic, and appearing under the unfavourable circumstances about to be noticed, yet may run its whole course

without petechiæ or any marked putrid symptom. It may, as shown by HILDENBRAND, be simple, or variously complicated; and, as remarked by Dr. PEEBLES, it may be benign throughout, or assume a malignant character, according to individual diathesis, the nature of the prevailing epidemic, or the mode of treatment. It generally presents itself as an epidemic, is contagious, and runs a uniform course, unless predominant affection of some internal organ modifies its course or prolongs its duration.

500. It has been shown above, that the *petechial affection* consists of minute stains or ecchymoses, caused by the transudation of blood from the minute capillaries of the vascular *rete* of the skin, owing to the atony of these vessels, and the alteration of the blood; that it may occur in the advanced stage of any fever, even of the more inflammatory or purely eruptive, when converted into an adynamic or typhoid state, by improper treatment or the peculiar condition of the patient; and that it is not, in any sense of the word, an *eruption*, as it has been very improperly denominated by some writers. This change in the skin, which has been viewed as one of the chief indications of incipient putridity, or of a septic tendency, is very different from the eruption characterising typhus. The *petechiæ*, or cutaneous ecchymoses, vary in dimensions from minute *stigmata* to large patches or *vibices*, and in the deepness or shade of colour. They very rarely appear at the commencement, even of the more putrid or malignant fevers, unless from peculiar depravity of constitution, or from causes affecting more especially the circulating fluids—as imperfect nourishment, unwholesome food, or other injurious ingesta.

501. But the *exanthematous eruption* attending true typhus, is as characteristic of it as the eruptions of measles or of scarlatina; and, although observed by numerous writers, it has been confounded with petechiæ, with which it is often associated in the advanced stages of the fever, or with miliary eruptions.—HILDENBRAND gave a description of it, as it appeared in the contagious fevers prevalent in Germany during the commencement of the present century; and Dr. PEEBLES has recently described it accurately and minutely, and as he saw it in Italy soon after the war. His description agrees with my own observations about the same period. This eruption appears in the early progress of a fever produced by human effluvia, when circumstances occur to promote them, or to prevent their dissipation. The animal miasm, whether generated by numbers crowded in a small space and confined air, or proceeding from a person affected by the disease, should be viewed as a poison, affecting the human body in a specific manner, and causing fever with an eruption of a certain form, which propagates itself by the diffusion of a morbid effluvia in the surrounding air, or by its retention in various animal productions or porous substances when shut up from the air.

502. This eruption usually appears from the third to the seventh day of the fever, but it may be delayed till the twelfth or fourteenth day. It is of a florid, reddish, or reddish pink colour; disappearing on pressure, but soon returning when pressure is removed. This circumstance is sufficient to distinguish it from petechiæ. The more exuberant

resembles the measles, and has been mistaken for them; but it is more papillar, and rougher to the touch, being sensibly elevated to the eye; and, although sometimes grouped or crowded, it does not coalesce so much as measles, but each papilla is more or less separate. It is sometimes vesicular, and followed by desquamation of the cuticle. It is occasionally indistinct, and may be then overlooked, and it sometimes approaches more nearly the miliary eruption. Hence it has been mistaken for this eruption in such cases. It is generally confined to the trunk of the body, the arms, and thighs; but it may cover nearly all the body. It rarely extends over the face or hands. In children, it appears only upon the trunk, or parts of it, and often scantily. It is sometimes evanescent, disappearing in one part of the day and returning in another (PEEBLES). It may be copious in some cases, and scanty in others, even in the same family. Owing to these circumstances, it may escape observation. It is not liable to recede early in its course; but if it disappear from injudicious treatment, or a faulty state of the system, malignant symptoms are apt to supervene.

503. In some cases, the interstices of the skin between the papillæ are red or erythematous. In these, there are also increased suffusion of the eyes, redness of the tongue at the point and edges, redness of the fauces, as in mild scarlatina, and subsequent desquamation of the cuticle. The *duration* of this eruption is from three to five days. When the exantheme is slight, it disappears without leaving discernible marks; but when it is exuberant, stains are left in the situation of the papillæ. If petechiæ occur in this fever, they seldom are observed before the eighth or tenth day, and then this eruption has usually disappeared. When the petechiæ are earlier, or the eruption continues longer, so that both exist together, they are quite distinct and different in their appearances; for the latter is never so dark or livid as the former generally is, and the petechiæ are not attended by the elevation of the cuticle and roughness characterising the eruption. The stains left by an exuberant eruption generally become livid when petechiæ are present; but the eruption itself does not assume a dark tint, as long as it retains its papillar form. In the more malignant cases, and when petechiæ appear early in the disease, the colour of the eruption may, however, become deeper, or may change with the alteration in the fluids and softer solids.

504. *A. DESCRIPTION.*—True typhus proceeds in a more regular and determinate manner than synchoid or nervous fevers; and presents the several stages into which I divided fever, when treating of it generally. The *premonitory stage* exhibits the same symptoms as are observed to announce other fevers, and varies much in duration. HILDENBRAND states from three to seven days; but a much longer time may elapse from the time of infection to the occurrence of the *stage of invasion*. This period is the commencement of the febrile paroxysms. It begins with a creeping sensation over the head and back, followed by shiverings, paleness of the surface, the cutis anserina, intervening flushes of heat, heaviness or giddiness of the head, and the usual symptoms of this stage. After a few hours—seldom more than twelve—the *stage of reaction*—the *inflammatory* of HILDEN-

BRAND, the *irritative inflammatory* of GOEDEN—appears. The pulse becomes full, strong, or oppressed; the countenance flushed; the skin hot and turgid; the head confused, heavy, or giddy; and the urine scanty and high-coloured. With these are associated catarrhal or gastric symptoms. —On the second day of this stage, after a sleepless and restless night, the heat increases, while the vomiting and sometimes the nausea disappear. The weight in the head changes to stupor, often with *tinnitus aurium*; giddiness is augmented, and the upright posture cannot be borne. The catarrhal affection is more developed: the eyes are red; the mucous membrane of the nose and fauces is tumid and red; deglutition is painful; tightness is felt in the chest, often with cough; and both hypochondria are tense and painful. The patient is averse from exertion, tardy in his answers, silent as to his complaint, and slow in protruding his tongue. These symptoms continue during the third and fourth days. On the latter of these, an exacerbation takes place, usually followed by a moderate epistaxis, excepting in the milder cases, and generally with relief of the affection of the head. From the third to the sixth day, but sometimes later, the surface of the body becomes turgid and the eruption appears. During the fifth, sixth, and seventh days, the symptoms are unchanged, excepting that the catarrhal affection commonly ceases with the appearance of the eruption. On the seventh day, an evident exacerbation takes place, followed by a slight remission of a few hours, and introduces a new stage.

505. The *nervous stage*—the *status nervosus* of HILDENBRAND—begins with the eighth day from the occurrence of rigors. The heat of the surface is now considerably increased, but the turgidity disappears. The epidermis is dry, shrivelled, and brittle; but petechiæ or miliaria are frequently present, and either appear in the latter part of the preceding stage, or early in this. The tongue, which was at first clean, and subsequently white, rather than loaded or furred, now becomes parched and shrunk. Thirst is increased; but the torpor is often so great that the patient does not ask for drink. The tightness of the chest goes off, and the breathing is freer, but more frequent. The cough ceases, and is often replaced by singultus. Swallowing is impeded, chiefly owing to the dryness of the fauces and pharynx. The bowels now assume activity—predominant action being determined to them in place of the skin. Repeated, loose, foetid stools occur, attended by slight pains in the bowels, and by flatulent distension of the abdomen, evidently owing to increased vascular action. The pulse is variable; it generally continues full, free, not very frequent, nor small or soft; and it often indicates imperfect reaction or contraction after the heart's impulse, or seems to be in a state of constant expansion. The most prominent, however, of the symptoms in this stage are those referrible to the sensorium. In the preceding stage, the external senses are impaired, and the ideas confused. There are sleeplessness, restlessness, and some involuntary motions. These are all aggravated or modified in this period. Muscular power is suppressed by the general torpor of the nervous system, rather than by debility, as in a state of intoxication; but the involuntary mo-

tions, such as tremors, subsultus tendinum, slight convulsions, or spasmodic affections, are increased. Difficulty of deglutition, and of evacuating the urine, is more common; deafness is increased; vision is impaired; and smell and taste are lost. The patient dreams without being asleep (*typhomania*), talks deliriously, is occupied with his internal impressions, and disregards or is unimpressed by external objects, or confounds internal and external perceptions. A single idea or impression usually torments the patient during the fever, and on recovery there is seldom any recollection of it. This state closely resembles somnambulism. With insensibility to external objects, there is complete loss of the appetites and desires; the patient wishes and feels nothing; and replies, when roused, that he is very well. This stupor, in various degrees, with the supine posture, at once announces the form of the disease. The foregoing symptoms continue during the ninth and tenth days. On the evening of the latter day, a stronger evening exacerbation than usual occurs, and lasts for a few hours; and a gentle perspiration, or some evacuation by stool or urine, takes place. A slight remission follows on the eleventh day; but on the twelfth and thirteenth, febrile heat, and the affection of the nervous system, are again increased.

506. The *period of crisis* now generally succeeds, and without any assistance from art. At the end of the thirteenth day, a more severe exacerbation than any former one takes place; the heat is more glowing; the arteries pulsate more strongly; the brain is more affected; and the stupor passes into sopor. In twelve hours afterwards, and on the fourteenth day, the parched skin shows a tendency to perspiration. In some, a slight epistaxis occurs, with relief to the head; the nostrils become moist; the tongue at the point and edges moist, clean, and red; and perspiration more copious and general. A free expectoration often takes place, especially if the chest has been affected. When the perspiration is salutary, it is uniform, not clammy, has a peculiar smell, and occurs during sleep. The stools are now copious, loose, and offensive; and the urine plentiful, muddy, high-coloured, and deposits a copious sediment. With these changes, or in a few hours afterwards, the patient seems as if he had awakened from a dream, or from a state of intoxication; and, with a return of complete consciousness, all the severe symptoms abate. A sense of fatigue and weakness, soreness of the whole body, pale hollow countenance, giddiness, deafness, and *tinnitus aurium*, drowsiness, or frequent inclination to sleep, tendency to perspire, quick pulse, and acceleration of it upon slight irritation or exertion, unnatural taste in the mouth, whitish tongue, &c., remain for six or seven days after the crisis—these symptoms gradually disappearing, the *tinnitus aurium* last of all.

507. *B. Modifications and complications.*—As in exanthematous fevers, so in this, variations from the regular type, both in the symptoms and in their course, are apt to occur, owing—1st, to the age, habit of body, previous health, and temperament of the patient; 2dly, to the prevailing epidemic constitution, whether inflammatory, bilious, or tending to the periodic type; and, 3dly, to the living, diet, and treatment, and to the unfavourable circumstances to which the patient is ex-

posed.—*a.* The *anomalous phenomena* observed in the *stage of invasion*, are few. The shivering may be so slight as hardly to be observed, the fever seeming to begin at once with increased heat; or the rigors may last or return at intervals during some days.—In the *period of reaction*, the modifications are often more numerous and striking. The inflammatory character of this stage is often greatly increased; sometimes as respects the violence of the general symptoms, but at others with severe local affection. When the *head* is the seat of prominent action, the delirium may be phrenitic, maniacal, or the stupor may amount to apoplectic sopor. Inflammation may take place, either in the *lungs*, or in the *liver*, or in the *digestive mucous surface*, and be so fully developed as to resemble idiopathic disease of these viscera, if the previous fever, stupor, tinnitus aurium, and peculiar eruption, did not establish the difference between them.—*Bilio-gastric* affection, also, may be so prominent as to simulate that form of fever. But the stupor and typhomania will assist the diagnosis, should the eruption be so slight as to escape observation. The *nervous* character may show itself prematurely; especially when the vital powers are weak, depressed, or speedily exhausted. In these, *septic* or *malignant* symptoms may occur. In some cases, the inflammatory stage may continue to the ninth or even to the eleventh day.

508. *b.* In the *nervous stage*, various modifications are also observed. Local affections may continue through the greater part of this stage, or may even first appear in it; particularly those seated in the intestines, and implicating especially the mucous follicles. Diarrhoea, or typhoid dysentery, may thus supervene, and be either slight, severe, or fatal. The former of these affections is caused by vascular determination to the intestinal mucous surface, consequent upon the subsidence of the eruption, and by the unhealthy bile secreted by the irritated liver from the impure blood circulating in it. The dysenteric symptoms are owing to the morbid action going on in the lower part of the ileum, in the cæcum, and large bowels. Lumbrici are sometimes passed. But the principal and most frequent variations consist in the appearance of numerous *petechiæ* and *vibices*, or in their increase or deeper hue, if they had previously been observed, with several other putro-adyamic changes. In these, the nervous symptoms may not be more remarkable than in milder cases; or these symptoms may be very prominent, either with or without the occurrence or aggravation of the malignant or septic state. Miliary eruptions may also appear in this stage. In the more unfavourable cases, the tongue may be shrunk like a piece of burnt leather, the heat of surface excessive, the diarrhoea exhausting, the distension of the abdomen great, and pains in the bowels severe. Muscæ volitantes, picking of the bed-clothes, constant muttering, spasmodic affections, stiffness or cramps of the extremities, paralysis of the eyelids or tongue, horror at liquids, may also occur. A black coating of the tongue and teeth; fœtor of the breath, stools, and of the body; dark petechiæ or vibices; ecchymoses or bluish patches; passive hæmorrhages, and even carbuncles, may appear during this stage, particularly when circumstances concur to produce putrid or septic changes in the course

of the fever. These severe cases, if they are not fatal before the fourteenth day, often run on to the seventeenth, twenty-first, or twenty-eighth day, and generally end in death.

509. *c.* Sometimes the *precrisis* on the seventh day either does not take place, or is not followed by any alleviation, or is attended by aggravation of the symptoms. If a decisive *crisis* take not place on the fourteenth day, it rarely happens till the twenty-first; a crisis between these days being seldom effective. When death occurs, the fatal change is either premature or procrastinated. The symptoms accompanying a crisis are often variable. Changes in the urine cannot be depended upon. Discharges from the bowels are often copious, without benefit; and if they continue so without alleviation of the symptoms, or are unnatural, ulceration of the intestinal mucous surface may be dreaded. A critical sweat is sometimes wanting, the patient recovering nevertheless.

510. *d.* The *decline* of the disease may be protracted, but never shortened; and attended by various symptoms, as a continuation of the stupor, nightly recurrence of delirium, or lingering affections of some one of the thoracic or abdominal viscera. A new disease, of an inflammatory kind, may occur during the stages of decline and convalescence, or tubercular consumption may supervene; and *relapses* are not infrequent in the latter period, owing to a fresh infection.—*Recovery* may be *retarded* by the severity of the complications, by want of sleep, by errors in regimen, and by the depressing passions.

511. *e.* The foregoing modifications refer entirely to aggravating circumstances; but some cases are so slight, that the patient scarcely keeps his bed—a trifling degree of stupor, with scanty eruption, and occasional pains in the bowels, constituting the chief complaint. In the more benign cases, a decisive crisis occasionally takes place as early as the eleventh, or even the ninth, day; but *relapses* are liable to follow, if the patient be exposed to a re-infection.

512. *v.* PROGNOSIS OF TYPHOID FEVERS. The prognosis will be influenced by the appearance of any of those phenomena to which attention has been directed above (§ 434.). But in addition to these, the practitioner will take into the account the previous condition, the *age*, and the sex of the patient; the nature of the prevailing epidemic; and the influences continuing to operate during treatment. As to the manner in which *age* should affect the prognosis, from the beginning, some very interesting facts have been adduced by Dr. ALISON, who has given the following table in illustration of the comparative prevalence and mortality of typhus at different ages, as observed in his practice:—

	Cases.	Deaths.	Proportions.
Under 15 years	- 83 -	- 2 -	- 1 in 41½
15 to 30	- 149 -	- 11 -	- 1 in 13½
30 to 50	- 93 -	- 17 -	- 1 in 5½
Above 50	- 17 -	- 7 -	- 1 in 2½
Total	342	37	1 in 9½

Of these 342, there were 170 cases of simple or mild typhus, in which only three deaths occurred; 79 cases presenting prominent affection of the head, and in these 21 were fatal; 58 cases with affection of the pulmonary organs, in which 13 were fatal; and 35 with abdominal affection, in

which only 1 death occurred. — From these, as well as from other data and facts, which have come before every experienced physician, it may be inferred that the mortality from this fever increases in an accelerating ratio with the advance in age and predominant affection of internal vital organs. It is very probable that the great increase in deaths at an advanced age proceeds from the circumstance of the powers of life being then less able to resist the changes and tendency to death that take place in the course of the disease, and the contamination of the fluids and soft solids; and from certain internal organs having then become highly predisposed to serious functional and organic lesions.

513. Typhus is seldom dangerous to children, in any class of society, although they are often attacked when the disease is epidemic. In the upper ranks, and in those accustomed to live fully and luxuriously, it is very fatal, and generally assumes highly inflammatory states in the early stages, or septic changes at a later period. In the epidemic in Ireland, during 1817, 1818, and 1819, from one fourth to one half of those in good circumstances, who were infected, died. Of twelve physicians who were actively engaged in the treatment of this fever in Cork, eleven were seized with it, and four died. It is less fatal to females than to males; but pregnant women frequently miscarry when they are attacked. Very few *negroes* recover from it. Persons whose minds have been much harassed previously to infection, are in the greatest danger. The putro-adynamic form, and, next to it, the low nervous, are most dangerous, of typhoid fevers.

514. vi. CAUSES. — The chief cause of true typhus has been already stated to be an animal miasm, generated either by a number of persons confined in a close air, or by the disease itself. This miasm contaminates the air, and infects the healthy frame through the respiratory organs — either directly as it proceeds from the morbid source, or indirectly by means of substances capable of retaining it for a time, and of giving it out upon exposure to the air. The causes *predisposing* to, or counteracting, infection, are deserving of a brief notice. Infants and old persons are the least susceptible. Adults, of delicate habits and melancholy disposition, and those who dread infection, are most liable to be attacked. Insufficient or unwholesome nourishment, personal or domestic filth, and bodily fatigue or mental distress, are very influential concurring causes. Persons of a lively disposition, those who use tobacco, and who have no fear of the disease, most frequently escape. Chronic diseases, particularly those of the lungs, ulcers, and external sores or eruptions, are very often preventives. HILDENBRAND states, that, in his very extensive experience, he never saw a consumptive patient contract the disease. A regular and fully developed attack seems to prevent a second, for many years afterwards, if not for ever.

515. Although animal or infectious miasms will occasion the low nervous and putro-adynamic fevers, yet they arise also from other causes, as shown above (§ 468. 485.). The latter not only may be consequent upon other forms of fever; but it also may proceed directly from terrestrial exhalations, or from animo-vegetable matter, decaying in a warm close air, or from a combination

of causes both internal or intrinsic, and external as respects the patient.

516. vii. TERMINATIONS AND ORGANIC LESIONS.

— True typhus terminates in recovery, in the great majority of cases — in about nine out of ten — even when left to nature. Medical treatment, if not very judiciously directed, may be as injurious as beneficial, by interrupting the regular succession of morbid phenomena, and preventing those changes from taking place that are conducive to recovery. An officious interference may thus be mischievous, particularly when the disease is regular or moderate, and no vital organ is very severely affected. Medical treatment will not shorten the disease; we can only expect to conduct it to a successful issue, by protecting internal organs from injury, when they experience the onus of morbid action, and by resisting the tendency to death, in the last stages. — A. When typhus ends in *death*, disorganisation of some important viscus, the exhaustion of vital power or of irritability, and deterioration of the fluids, are the immediate causes — each in various grades; for this event cannot be ascribed to one solely, although either may be chiefly concerned in producing it. — When debility or exhausted irritability, the state of the blood, or lesions of the intestines, cause this termination, the stupor and delirium generally cease, and the patient recovers his consciousness just before death. — Upon *dissection*, in these cases, no morbid appearances, beyond slight congestion, or a somewhat increased quantity of fluid in the ventricles or at the base of the brain, are observed within the cranium; the digestive mucous surface, and the blood in the large vessels and cavities of the heart, being most altered. When death is produced by inflammation of the brain, or of its membranes, during the stage of reaction, or by simple or inflammatory congestion, in this or the subsequent stage, symptoms of an irritated or inflammatory state of the brain, passing more or less rapidly into apoplectic sopor, precede the fatal issue. In these, the blood-vessels of the brain and membranes are engorged, sometimes with extravasation of serum, or of sanguineous serum, or more rarely of blood. The patient sometimes dies soon after a critical exacerbation, from the sudden occurrence of the apoplectic state. In this case, the brain is only slightly congested, with little or no effusion of fluid. In those who die with cerebral affection in an advanced period of the disease, collections of serous fluid in the ventricles, and between the membranes of the brain, are frequently found. Abscesses in the substance of the brain are met with in rare instances. HILDENBRAND considers *nervous apoplexy* to be the most frequent cause of death in typhus. This only occurs in the latter days of the disease, preceded by the symptoms of the nervous stage, a fatal result taking place suddenly. As it usually happens on critical days, it may arise from the exacerbation, which then occurs, wholly exhausting the nervous powers; particularly as no morbid appearances, at all adequate to account for death, are observed on dissection. It differs but little from death by debility, excepting that the latter mode takes place gradually and slowly.

517. M. CHOMEL gives the following as the results of a very careful inspection of the encephalon in 38 cases: — Injection of the membranes,

in 4; oedema of the membranes, in 7; very slight general softening of the brain, in 6; effusion of serum in the ventricles, varying from a drachm to half an ounce, in 12; numerous red points upon dividing the cerebral substance, in 5; increased density of this substance, in 2; and the normal condition, in 15.

518. *a.* A fatal issue is evidently caused, or accelerated, in some cases, by the severity of the associated disease of the respiratory organs, preventing the necessary changes from being effected in the blood circulating in the lungs. It proceeds in others chiefly from the influence of the morbid blood upon the weakened irritability of contractile tissues, and particularly of the heart; and, in rare instances, from perforation of the intestines inducing general peritonitis, which soon exhausts the remaining powers of life. The lesions of the digestive mucous surface evidently assist in producing this effect; but in a much less degree than the depression of organic nervous power and of irritability, and the deteriorated state of the blood, with which they are intimately connected, and of which they are important effects. All these internal lesions evidently commence in the course, or even not until the advanced stages, of the disease; and, when developed, are analogous to the sphacelated sores and other alterations which take place in external parts in the more malignant cases. These internal as well as external lesions depend upon the anterior changes in the organic nervous power and irritability, and in the blood; they present similar characters; and, where even the slightest external lesions are observed, the existence or occurrence of those that are internal is to be feared. The most constant of these latter are discolouration and diminished cohesion of the intestinal tunics, distension of the intestinal tube by flatus, and enlargement and ulceration of the follicles, with inflammation or engorgement of the mesenteric glands. There are various other lesions associated with those; but they are different in different cases.

519. *b.* Since PETIT and BRETONNEAU directed attention to the almost constant change in the *intestinal mucous follicles* in typhoid fever, the subject has been further illustrated by the researches of LOUIS, ANDRAL, BRIGHT, CHOMEL, and others. But, although this lesion is so constant in the low fevers occurring in Paris and some other parts of France, it is certainly not so frequent in the same states of fever in this country; and, instead of viewing it as intimately connected with the nature of these fevers, I consider it as only one of several changes superinduced in the progress of the disease, but one of the most constant and important. The first alteration which these follicles present is enlargement or engorgement, owing to the formation under the mucous coat of a yellowish-white matter, slightly friable, which imparts to the agminated follicles the appearance of a thickened patch, and to the isolated follicles that of a pustule. To this state, which is generally preserved till the twelfth or fifteenth day, succeeds, in most cases, ulceration, beginning either in the mucous surface and extending to the whitish matter, or in this latter, which becomes softened and detaches the mucous coat from the parts underneath. These grades of lesion in the follicles almost constantly commence in those nearest the ileo-cæcal valve. From the

eighth to the fifteenth or twentieth day, the agminated patches, which have not experienced the above changes, present a reticulated appearance; their mucous covering being of a deeper colour than natural, softened, partially detached, and perforated by numerous orifices of enlarged follicles. In proportion as these patches disappear by ulceration, or by sphacelation, the margins of the ulcers become either more level, evincing a disposition to cicatrization, or more elevated, owing to thickening of the submucous and muscular tunics. The ulceration generally extends in width and depth, and successively invades the submucous, muscular, and serous coats; ending at last in perforation; but death most frequently takes place before this last change occurs. Evidence of cicatrization is, in rare instances, observed, when the disease has been of long duration. Ulceration does not attack all the patches containing the enlarged glands; for resolution sometimes takes place, or absorption of the matter they contained.

520. *c.* The *mouth tongue*, and *pharynx* are frequently covered with a thick mucus, underneath which the mucous coat is often not manifestly altered. But in some cases, this coat is softened, discoloured, and studded with a few small round or oval ulcers, most of them not referrible to the follicles. The *œsophagus* occasionally is excoriated or slightly ulcerated. The *stomach* is variously coloured in its internal surface. It is sometimes pale, most frequently red in various grades, or purplish or brownish red, occasionally yellowish; and often the parts of the organ in contact with the liver and spleen have imbibed the colour of these viscera.—*Softening*, or diminished cohesion, of the mucous and submucous tissues, throughout the greatest part of the large curvature, or even the whole of the stomach, is observed in a large proportion of cases. The softening seldom extends to all the coats. Sometimes the mucous tunic is not only softened, but entirely destroyed, the cellular tissue or the muscular coat being denuded. It is generally easily detached from the subjacent parts. M. CHOMEL found, of forty-two cases, more or less extensive softening in fourteen. He remarks, that he observed softening of the internal coats of the stomach in the same proportion of fatal cases from small-pox.—*Thickening*, and great *tenuity* of the mucous coat, have also been seen but not so frequently as softening. Although M. LOUIS met with ulceration of the mucous membrane of the stomach in four cases, and M. ANDRAL in ten, yet M. CHOMEL did not find one instance in the forty-two inspections, of which he has given the details.

521. *d.* The *duodenum* and *jejunum* have occasionally imbibed the colour of the bile or of adjoining viscera. They are generally of a deeper red than the rest of the intestines. The *ileum* is usually more or less red, with numerous arborisations on the external surface; but more frequently the redness is seated chiefly in the mucous coat, and particularly in the margins of the valvulæ conniventes. In many cases, the redness is disposed in zones, between which the three coats of the intestine present a remarkable pallor. The redness and injection are not greater around the ulcerations and tumid patches of agminated follicles, than in other parts. Alterations of colour are not so common in the *large*, as in the *small*

intestines, the former presenting chiefly reddish or reddish brown patches, or ecchymosed spots. *Softening* of the mucous surface of the intestines, in the situation of the agminated follicles, or in the intervals between them, is seldom very great; the subjacent cellular tissue more frequently and decidedly presents this change. *Induration* is never observed in the digestive canal after typhoid fevers. In several cases, the mucous coat is remarkably *tumid* or thickened, presenting a gelatinous aspect, and various shades of colour from a bright red to a reddish black. This change varies in extent from two or three inches to as many feet, but is quite continuous, extending around the intestine. It is most frequently found in the ileum, but it may occur in any part of the small or large bowels. It arises from the infiltration of fluid blood into the mucous and submucous tissues; for, upon pressing the part, the blood exudes through the pores, leaving the mucous coat almost in its natural state. M. CHOMEL observed this lesion in seven out of forty-two cases, and in all these there was hæmorrhage, either from the bowels, or into them. He also remarked it in other diseases, wherein intestinal hæmorrhage had occurred before death.

522. *e.* The *mesenteric glands* are very generally more or less changed, especially in connection with intestinal ulcerations. They are frequently only enlarged, sometimes softened, and occasionally both enlarged and indurated. In some instances, puriform matter may be traced in the sanious blood which they contain. They are usually only enlarged or indurated, or sometimes injected, in fatal cases which have not been of long duration. M. CHOMEL gives the following as the results in the 42 cases examined by him: — Enlargement, with commencing softening and suppuration in 14 cases, dead from the seventh to the twenty-fifth day of the disease; marked softening in 12, dead from the tenth to the thirty-sixth day; redness, enlargement, and induration in 10, who died after the nineteenth day; slight enlargement, with a bluish, purplish, and blackish discolouration, in 3 cases, dead after the seventeenth day.

523. It would seem that the mesenteric glands experience an analogous change to that of the follicles; that they become enlarged and softened about the same period as the follicles; and that, if the disease takes a favourable turn, they are gradually diminished, and assume their natural state. Suppuration is seldom observed in them, and ulceration never. The glands nearest the cæcum are those chiefly affected; and this is the part in which the follicles are most frequently and early diseased. M. CHOMEL does not think that ulceration of the follicles is the cause of the suppuration of the glands, as the latter may exist without the former. — I believe that softening of the mesenteric glands, with traces of puriform matter in them, may take place without any necessary dependence upon ulceration of the follicles.

524. *f.* The lesions observed in the other abdominal viscera are seldom such as materially to influence the termination of typhoid fevers. The *liver* is frequently more or less softened. M. LOUIS found this alteration in nearly one half of the fatal cases he examined. It is generally associated with softening of other organs, especially of the *spleen*. This viscus is enlarged in most of

the fatal cases; in one half it is increased to about double its usual volume, or upwards. It is always also softened—sometimes very remarkably so. The alterations of these organs seem to have little or no influence upon the symptoms during life. The same may be said of the lesions of the mesenteric glands. Even the ulcerations found in the intestines have no determinate relation to the phenomena referrible to the digestive canal. Diarrhœa is not a uniform result of this lesion; and pain is seldom complained of unless at an early stage, or until the peritoneal tunic is perforated. The ochrey appearance of the stools, noticed by Dr. BRIGHT, cannot be depended upon as an indication of this alteration; and meteorismus, or a tympanitic state of the abdomen, although often attending it, indicates chiefly extreme depression of vital power, evinced especially in the weakened irritability or tonicity of the intestinal tunics, throughout the whole tube, rendering them incapable of resisting the accumulation of flatus. Many of the symptoms referred, by Continental writers, to organic lesions of the bowels, originating either in inflammation, or irritation, are inseparable from the typhoid states of fever, and are the expression of the disease on the whole œconomy, rather than on this part of it in particular. That the affection of the digestive mucous surface and follicles is greater in some epidemics and countries than in others, and in large cities than in towns or country places, I am convinced from observation and the researches of modern pathologists. That it is more common in France, especially in Paris, than in England, is evident from the results of recent inquiries. Actual ulceration was found in *La Charité* by M. ANDRAL, in 92 cases out of 229 examinations; and only in 16 out of 54, by Dr. TWEEDIE in the fever hospital. The proportions, although different, show the frequency and importance of the lesion, and the necessity of guarding against its occurrence in the course of the disease. But the above changes of the intestines and mesenteric glands are not confined to typhoid fevers. They often take place in other fevers, whether bilious or gastric, mucous, synchoid, &c., particularly when these fevers lapse into a putrid or typhoid state in their advanced stages. Their frequent occurrence also in hectic is well known; and I believe that they would have been found still more frequently in all fevers, both continued and remittent, if the intestinal canal had been more generally inspected in that way in which only it can be said to be inspected, namely, by laying it open throughout its whole extent. That it has been very imperfectly examined in most epidemics, is evident, from the descriptions furnished of the morbid appearances, and from the circumstance of it having been very generally overlooked as late as the epidemics described by HILDENBRAND and others early in this century; and, although occasionally inspected by some of the writers upon the epidemic of Ireland, in 1817, 1818, and 1819, it was not until after the researches of BROUSSAIS, PETIT, BRETONNEAU, ANDRAL, and LOUIS, that attention has been generally directed to it. Making every allowance for the undue importance assigned to the lesions observed in this situation, the propriety of estimating them correctly, as to their origin and consequences, must be conceded.

525. *g.* The importance of the lesions observed in the *respiratory organs* has been alluded to. The *epiglottis* has been sometimes seen œdematous. M. CHOMEL found it ulcerated, with denudation of the cartilages, in three cases out of twenty which were carefully inspected. The *larynx*, especially its superior aperture, is occasionally also the seat of ulceration. When ulceration is observed in either of these situations, it often also exists in the *pharynx*, in which it seems often to have begun; and it is generally found to consist of several small but deep ulcers, commencing in the form of pustules filled with whitish purulent matter, but without any surrounding injection, or inflammatory circle.—The *lungs* are often much diseased; but the alterations of them most frequently seen, occur only during the last days of life; and are referrible to the predominance of physical, over the vital, forces, as the disease approaches a fatal issue. But as congestion of the circulating fluids occurs in the more depending parts, the vital cohesion, particularly of the parenchymatous parts of the lungs, becomes diminished, giving rise to more or less marked *softening* of the engorged part. In less frequent instances, it is not only a simple congestion from stasis of the fluids that is found, but also indications of pneumonia in the first or second degree. The pneumonia is sometimes confined to two or three lobules; in which case it may have passed into a suppurative state before death: in other instances it occupies a whole lobe, but without any signs of suppuration. Œdema, or even emphysema, of parts of the lungs, is also occasionally remarked. The *bronchi* are generally red, or of a livid red, or violet colour. The tint generally deepens in the small bronchi, and in the direction of the air-cells. They also contain some mucus.—M. CHOMEL gives the following as the state of the lungs in 42 cases:—Congestion, with or without softening, in 18; hepatisation in the first degree, in 3; hepatisation in the second degree on one side, in 2; lobular pneumonia, in 3; emphysema, in 2; œdema, in 2; effusion into the pleura, in 2; and the normal state, in 10.

526. *h.* The state of the *blood* varies much in fatal cases of nervous, putrid, or typhus fever. Where the putrid, malignant, or septic characters have been most remarkable before death, the changes of the blood have been usually the greatest.—This fluid is commonly dark, black, diffuent; and but rarely in the state of fibrinous clots. In a few cases, the blood in the heart and large vessels assumes the form of black coagula, which are different from those observed in other acute diseases. This state is evidently owing to the absence, or great diminution, of fibrine. The presence of a gaseous fluid in the blood, especially in that of the veins, is also evident in some cases. I have observed this circumstance in death from other diseases, particularly if asphyxy was the mode in which the fatal event took place. (See art. BLOOD, § 110. *et seq.*)

527. *i.* The *heart* is often softened and somewhat discoloured. The *softening* of this organ varies from an almost unappreciable, to a most marked, degree. In some cases it is so great, that the fingers may be pushed through the parietes of the ventricles with ease. This diminution of cohesion is generally observed in cases where the changes in the blood, and softening of the liver and spleen,

have been the most remarkable. *Flaccidity*, or a state of softness different from that just mentioned, is still more frequent. The flaccidity may exist without very manifest loss of the cohesion of the structure; but it is generally attended by some degree of the latter, and the softening may be great, and yet the flaccidity not very apparent, although this is rare.—The *colour* of the internal membrane varies in different cases, and even in the opposite sides of the heart in the same case. In some, the membrane is red; in others dark, brown, or livid: it is often colourless, particularly when the heart is softened. It never presents inflammatory appearances, nor the changes immediately proceeding from the inflammatory state.—The researches of MM. TROUSSEAU, RIGOT (*Archives Génér. de Méd.* t. xii.—xiv.), and CHOMEL (*Clinique Méd.* p. 279.), show that the redness often found in the aorta, cavities of the heart, and large veins, in this class of fevers, is entirely owing to the tinging by, or to imbibition of, the colouring particles of the blood. Inflammation of the heart, or of its membranes, has not been observed in any case of these fevers.

528. *k.* The *external changes* observed after death most frequently commence a considerable time before this event. These consist chiefly of petechiæ, vibices, and blotches, varying as to size, situation, and depth of colour; and are to be ascribed to the extravasation of serum, coloured with red particles, or of blood itself, into the vascular layer of the skin. Gangrenous eschars, and sphacelus, are met with chiefly in parts pressed upon by the weight of the body, as the sacrum, shoulder blades, heels, and scalp of the occiput, or in those to which blisters, sinapisms, or other acrid substances have been applied. But these changes may occur in other situations, although rarely, and without these causes, as in the insides of the thighs; unusual pressure, or any other cause, either dissipating or exhausting the remaining vitality of the part, producing these effects. Phagedenic sores or ulcers, and enlargements of the absorbent glands, are also observed in rare instances. These sphacelating or spreading ulcers often commence in the form of pustules or vesicles, which break, leaving a foul sore which rapidly spreads. Besides these, the usual consequences of erysipelas are sometimes observed, or the remains of exanthematous and miliary eruptions. Even emphysema has appeared shortly before, and has remained after, death.

529. *B. Pathological conclusions.*—The *exposition* I have made of the organic lesions, more especially proceeding from typhoid fevers, suggests some important considerations, relative not only to the nature, but also to the treatment, of these diseases. Few of these changes become apparent before the seventh day from the invasion, when vascular action has passed into exhaustion, when organic nervous power and irritability are remarkably lowered, the circulating and secreted fluids are become morbid, and the powers of vital resistance in great measure overthrown. If inflammatory action should attack any part, either in this state, or even at an earlier stage, it will be very different, as to its phenomena, its progress, and its results, from inflammation occurring primarily, or in a system whose vital and physical constituents are not materially deranged. It is the remarkable affection of these

constituents by the causes of fever, and by the changes following more directly upon these causes, that imparts a similar character and termination to all the lesions now described. The depressed vital power of the extreme vessels, the lessened irritability of contractile parts, and the diminished vital cohesion of parenchymatous and other structures, heightened by the morbid state of the blood, are very frequently followed by gradual softening, infiltration, congestion, or effusion; and these often pass into disorganisation amounting even to sphacelation, or to sphacelating ulceration, even without the intervention of inflammatory action, or of any of its consequences. Owing to the intimate dependence of the states of the digestive canal, more especially of its internal surface, upon organic nervous influence, the former is involved, in a correlative manner, whenever the latter suffers. The tonic contractility of the muscular and serous coats of this canal is much diminished, the vital cohesion of its mucous membrane is weakened, the tonicity of the extreme vessels of this coat is lessened, and its functions of secretion impaired or otherwise changed. In this state, it is unable to resist the impressions made by morbid secretions passing over it. The alterations which had previously taken place in the organic nervous influence, in the functions of respiration, and in the blood, have conjointly given rise to diseased—usually acrid, or irritating—secretions from the liver, pancreas, and even also from the intestinal surface. When we find these secretions produce spreading or sphacelating sores, as they often do, in the protected cutaneous surface, we cannot be surprised at their occasioning analogous lesions in the more delicate mucous surface of the intestines, rendered still more delicate and susceptible of lesion by the previous changes just described. During the several days of the patient's life, from the commencement of these changes, or from the presence of morbid secretions in the intestinal canal, absorption will proceed on the digestive mucous surface; and, notwithstanding the amount of absorption may be very small, yet we cannot conceive it possible, that morbid secretions, either floating through the intestines, or collected in the follicles, will pass through absorbent glands, or even into the vessels which run to them, without producing a material change in them. If these views be just, the inference that depressed organic nervous influence and irritability, a morbid state of the blood, and disorder of the secretions, are concerned especially in causing the changes of structure observed in the digestive canal, will be admitted; and, if admitted, it becomes the basis of a rational method of treatment. But these early pathological states induce also those organic lesions in typhoid fevers, affecting other internal organs, and even other external parts, and stamp them all with the same important characters—characters indicating both a common origin and a similar tendency, and pointing to the same principles of cure.

530. viii. TREATMENT OF TYPHOID FEVERS.—

The treatment of this class of fevers is the most difficult in practical medicine. If the physician possess not just views as to the different and varying states of vital action, and as to their influence in producing organic lesion—if he be not enlightened as to physiological pathology, as well

as to pathological anatomy—if his knowledge of the instruments of his art be not adequately varied and comprehensive—if his resources be not great and based on science—he administers to a patient in any of the forms of typhoid fever, with an equal chance of doing mischief, or of affording benefit; and he may as well adopt his plan of treatment from the “hazard of the die,” as to attempt to reason on the matter. It is better that the patient were left to the spontaneous efforts of nature, than that he should fall into the hands of such a practitioner. If we look back to the influence of theory and system in the treatment of these diseases; to the importance bestowed on names; and to the manner in which names have been confounded with, or substituted for, indefinite and varying entities; we shall not be at a loss to explain wherefore it has often been a matter of difficulty to decide, whether or not medical interference has proved beneficial or injurious. This is, however, not an opprobrium to our science; but a proof of its difficulties, and of the ill-founded pretensions of many of its professors and teachers. In our own days, we have seen pretensions to which ignorance gave confidence, and for which professional cant procured currency, obtain a credence which now seems surprising, and produce results which the adequately informed always anticipated. We have witnessed the promulgation of doctrines, and of modes of practice, warranted neither by an acquaintance with vital actions, nor by a knowledge of, or regard to, facts, lead to the most serious consequences; and have remarked, moreover, the power they obtained over those who were either unwilling or unable to inquire into their truth. But we have also seen, in the brief space of two or three years, the illusion vanish before the increasing and spreading lights of pathological and practical knowledge.

531. The difficulties attendant upon the treatment of this class of fevers depend chiefly upon the varying states of vital action in their course; the modifications and complications they present in different circumstances and epidemics; and the inadequate means of discrimination in our power, between the changes induced by treatment and those taking place spontaneously.—It is not also from the effects produced upon a few detached cases, that we can judge sufficiently of the efficacy of certain remedies; but from the results in a number—from the rate of mortality in various circumstances, and in different epidemics. Whatever may have been the method advised by writers—too many of whom have written from motives wide from those by which alone they ought to have been actuated—we shall find, upon close inquiry, that the general mortality has been such as to demonstrate its little efficacy, or to show the small superiority possessed by it over others.

532. The ancients observed the changes which take place in the course of fevers with great attention, attributed recovery to the critical evacuations which frequently occurred in their advanced stages, and did not attempt to interfere with the efforts of nature as long as the disease pursued a simple and mild course; but interposed in order to accelerate and replace evacuations, when they did not occur after a certain period, or were interrupted by any circumstance. The chief fallacy in this doctrine is, that the evacuation, when it

occurred, was mistaken for the cause of the amendment, instead of being viewed as the effect, and as one of the signs by which this change is often indicated.

533. The physicians who, in modern times, attributed an important part to putridity of the humours, recognised merely a portion of the mischief, and that often the most remote and contingent, and mistook, in great measure, both its origin and nature. They had recourse to camphor, bark, musk, and various preparations, both vegetable and mineral, possessing antiseptic properties; and, if they had employed them in appropriate periods and states of the disease, the benefit derived from them would have been much less equivocal. But, mistaking the origin of the phenomena usually called putrid, they frequently prescribed these medicines improperly; and whilst endeavouring by an early exhibition of them to prevent putridity, they actually often accelerated or favoured its occurrence.

534. A nearly similar mode of treatment was advised by BROWN, and his once numerous followers on the Continent; but it was based upon a different doctrine—upon the predominance of the asthenic diathesis and its consequences. Although wine, opium, tonics, and stimulants, were recommended by them, in various forms and combinations, with advantage, in certain states of typhoid fevers, particularly in the latter stages; yet the evils resulting from an early recourse to them were also sufficiently evident, and at last became manifest even to the disciples of this school. That this practice, and the modifications introduced by its partisans, did not prove so injurious in the treatment of fever, especially on the Continent, as may be supposed, is accounted for by the circumstance, that depressed vital power, with septic changes in the fluids in the last stages, characterised the much larger proportion of fevers prevalent for several years after its promulgation. But the appearance of exanthematic typhus in the north of Italy, at the close of the last century, opened the eyes of RAZORI to the impropriety of having recourse to stimulants in its treatment, and laid the foundation for the doctrine and practice of *contra-stimulus*. The general character of the petechial fevers prevalent about the commencement of the present century in Italy and Germany, was such as I have delineated in the section on typhus (§ 497.), with more or less of inflammatory or irritative action in the stage of excitement; the exanthematous eruption in this stage being frequently mistaken for petechiæ, and the appearance of these, and of other adynamic symptoms, being favoured by the vascular reaction which preceded them.

535. The administration of *tartarised antimony*, in large doses, was the principal treatment employed by RAZORI. When the patient was young and robust, and the disease had not reached the acme of excitement, he directed a moderate bloodletting at the outset, and, immediately afterwards, four, six, eight, ten, or twelve grains of tartar emetic, or even more, in solution. He prescribed this medicine in smaller doses subsequently, or substituted for it the *kermes mineral*, conjoined with nitre, and in doses of one grain, or of a grain and a half, every half hour, or hour, or every two hours, according to the degree of vascular excitement. He often gave the tartar

emetic and kermes alternately. RAZORI also employed purgatives, particularly when the antimony did not act sufficiently upon the bowels; preferring neutral salts, manna, and tamarinds, in large doses, and administering them, in other cases, in enemata. He enforced a cooling regimen and severe diet, and allowed only refrigerant beverages. The success of this treatment is stated to have been great; and its propriety, as well as success, may be admitted, when employed in an epidemic characterised by high vascular excitement at its commencement, and when adopted sufficiently early after reaction has taken place, and in previously healthy persons. But in other states of typhoid fever, and in the latter stages especially, the large doses of antimony here advised appear not, *à priori*, to be suitable means. It should, however, be admitted, that the exhibition of tartarised antimony in the advanced stages of this fever has never been satisfactorily tried, either in this country or in France and Germany. That it may be found not so inappropriate as generally considered, is an inference which the trials made of it, very recently, by Dr. GRAVES, of Dublin, fully warrant.

536. The pathological tenets lately prevalent in France have, as M. CHOMEL states, prevented the treatment of RAZORI from being adopted, or even tried, in that country. The doctrine of BROUSSAIS was opposed to this and every other means that seemed to its supporters likely to aggravate the inflammatory action of the digestive mucous surface, which they suppose to be the cause of all fevers. If we examine the practical tenets of this school, we shall find more than one postulatam assumed as fully established, although admitting not only of doubt, but even of disproof. That fever does not depend upon this lesion, although predominant morbid action in the digestive canal may appear in many cases, and in some fevers more frequently than in others, has been already shown. And, granting that this morbid action is attended by vascular injection of the mucous membrane, it still remains to be proved, that it is the same kind of affection as inflammation. That it is not the same as primary and sthenic inflammation, its phenomena and results, as well as the *juvantia* and *ludentia*, sufficiently prove. Even granting the doctrine of BROUSSAIS in its fullest range, it still remains to be demonstrated, that the treatment advised is that which is the most beneficial, or the most appropriate, in the numerous and varying morbid conditions which fevers assume; and it, moreover, should be shown, that the means which the espousers of this doctrine reprobate, are one whit more prejudicial than those which they laud. In a class of diseases so varying, and even opposite, as to their pathological states, as fevers are, not only in their different forms, but also in the same case at different stages, the success of various remedies cannot be predicated from doctrinal tenets. However ingenious the theory, and close the reasoning, by which we are led to practical inferences, careful experiment and repeated observation are necessary to test the character of any method of cure; and even were we to adopt the views of BROUSSAIS, to these tests we ought to resort before we should decide between the efficacy of gum-water and leeches on the one hand, and that of antimony and purgatives on

the other ; or, indeed, respecting the propriety of any remedy whatever.

537. The pathological views of HOFFMANN, and the modifications of them by SAUVAGES and CULLEN, although entirely based upon solidism, were favourable to rational modes of practice. These views, in the varying explanations of them furnished by HEBERDEN, FORDYCE, and others, have very generally guided practitioners in this country in the treatment of typhoid fevers, until Dr. HAMILTON introduced a modification of the usual practice, or induced them to have a more frequent recourse to purgatives than had previously been ventured upon. That these remedies, especially when judiciously selected and combined, do not produce the mischievous effects in typhus which BROUSSAIS supposes them to produce, even when given in cases the most favourable to his views, I am convinced by experience, and many of his disciples are at last opening their eyes to the fact. MM. BRETONNEAU, ANDRAL, and others, more or less partial favourers of his doctrine, have recently so far discarded the practical tenets of their school, as to venture on the exhibition of these medicines ; and, as M. CHOMEL justly remarks, have found that the dread of them so long entertained is unjust, and that they may be employed early in many cases of typhus with great benefit. Where, however, there is reason to suspect the existence, or even the commencement, of ulceration, the impropriety of having recourse to them, unless with the circumspection and in the manner hereafter to be mentioned, cannot be doubted. But ulceration seldom occurs before the twelfth day of the disease ; and if they have been judiciously employed previously, I believe that it will very rarely take place either then or at a later period.

538. The humoral pathology, although superseded very generally by solidism, since the days of HOFFMANN, still continued to be partially adopted by some practitioners in different parts of the Continent. It has been lately revived in a too exclusive manner in this country. Amongst those who have espoused views of this kind may be mentioned, Dr. STOKER, Dr. CLANNY, and, still more recently, Dr. STEVENS—each of whom has endeavoured to establish the early predominance of morbid states of the blood. These views have been already partially discussed ; and I have now nothing further to add respecting them, than that the changes of the blood for which Dr. STOKER argues, are those which have been above stated (§ 526.), and which refer merely to its external appearances. Dr. CLANNY insists chiefly on the diminution in typhus of the carbonic acid, which he supposes the blood to contain in health. He recommends the use of fluids containing, or evolving, this gas, as effervescing draughts, Seltzer water, &c. M. CHOMEL states, that he gave this practice a trial in the Hôtel Dieu during two years ; and that, although the cases in which he employed it were not numerous, they satisfied him that it did not influence the usual results, and that he preferred, therefore, to try other means, the inefficacy of which had not been so fully shown. Of the treatment of Dr. STEVENS, in respect of this class of fevers, I entertain similar opinions to those expressed above (§ 332.). In two cases of low nervous fever to which I was lately called, at a period, however, too late to

expect benefit from any treatment, I prescribed the remedies this writer has advised, but without any effect.

539. If the rational method of treatment, or that which is modified according to the form, state, or stage of the disease, is not much more successful than that which is dictated in the spirit of system, or of empiricism, it has at least this to recommend it,—that it brings the results of science to bear upon existing pathological states, both vital and structural. Although not admitting so readily of the usual tests of success as more empirical methods, the experienced physician will readily form a tolerably accurate idea of the circumstances, either promoting or preventing favourable results. He will make due allowances for the forms and periods of the disease, the characters of the epidemic, the influence of season, and for the numerous circumstances appertaining to individual cases ; and he will at once perceive, that the means that are beneficial in one epidemic, or in one form of fever, or in certain cases, will be most injurious in others. In the present state of our knowledge, the rational method of cure is that which is most appropriate to the different varieties and stages of fever. According to it, indications or intentions are derived from a due estimate of existing symptoms and signs, and of the pathological conditions evinced by them. Whilst it comprises every method of cure, and all kinds of means, it adapts them to the states of the disease and of the patient. The judicious physician employs, according to circumstances, remedies the most opposite ; and, in different cases, or in different periods of the same case, he has recourse to sedatives, to refrigerants, to evacuates, to tonics, to astringents, to stimulants, or to antiseptics. He neglects no means, but adopts none exclusively ; and, while interpreting the value of symptoms, and inferring the morbid states producing them, he endeavours to select and to combine the medicines, whose known operations are such as are most likely to remove these states, or to prevent the accession of others usually supervening in the course of the disease, and increasing its danger.—I will now proceed to consider—1st, The treatment appropriate to the different stages of typhoid fever ;—2dly, The modifications required by its different forms and complications ;—and, 3dly, The means recommended in a special manner, and the circumstances or states of the disease in which they may afford benefit.

540. A. The Treatment appropriate to the stages.—a. In the premonitory stage, and whilst that of invasion is not fully formed, the future fever may be checked or prevented by the shower bath, followed by frictions of the surface ; by an emetic, or by a warm stomachic purgative ; or by a warm or vapour bath ; or by all these following in succession ; and in some cases, also, by warm diluents or diaphoretics ; but this result cannot be depended upon.—b. When the stage of invasion is pronounced, bleeding, hot stimulants, &c. are hurtful, or even dangerous. Tepid and warm diluents, and the warmth of bed, are the most suitable means. If vomiting accompany this stage, it may be increased by tepid and emollient diluents. If nausea only be complained of, and if there be little pain, tenderness, or tension, in the hypochondria and epigastrium, an emetic may be given, and its action promoted by these means.

—This treatment will generally shorten the chills, &c. characterising this period, and favour a relaxation of the surface, or the occurrence of moderate reaction.

541. *c.* In the *stage of excitement*, the treatment must altogether depend upon the degree in which reaction is developed, and the manner in which the brain, the lungs, or the digestive canal, appears to suffer. If the fever does not present, early in this state, the characters of low nervous fever, to their full extent, or those of an adynamic, or of a putrid or septic kind, then a small or moderate *bloodletting* may be prescribed; but the effects at the time of the operation should be carefully observed. If the patient be young, or robust, previously healthy and well fed, then a more copious depletion may be practised, if he be seen early. Even in the lower states of this fever, if any of the viscera just named be prominently affected, a *local depletion*, either by leeches or by cupping, may be employed. But if the period of excitement be far advanced; if the fever be simple or mild; if it have passed the tenth day; and if it be the true or exanthematic typhus, unattended by inflammatory associations; bloodletting will seldom be of service, and it may interrupt the regular and favourable course of the disease, particularly the latter form of it. In a large number of cases, in which M. Louis states bloodletting to have been tried, and in which it appears to have been indicated, the advantage procured by it seems to have been slight; but sufficient to increase, to a small amount, the proportion of recoveries, and to diminish the duration of the disease.—*Emetics* have been advised also in this stage; and, in cases where the chills return on successive days, or frequently alternate with flushes, I believe that they will be found of service. HILDENBRAND directs them in the first, second, or third day, or even later; having premised a bloodletting in the cases indicating it; and prefers a large dose of ipecacuanha, with a grain of tartar emetic.—Next to emetics, *purgatives* are of advantage. At an early period, or before the eighth or ninth day, a full dose of calomel, either alone or with rhubarb, may be given; or jalap, with cream of tartar; and their action promoted by moderate doses of the neutral salts, or by manna, tamarinds, &c., according to circumstances. These clear away morbid secretions, and mucous sordes, from the digestive surface; which, if allowed to remain, would favour the occurrence of the morbid changes in the intestines. If, however, the bowels have been much relaxed, and still continue so, it will be preferable to give an occasional dose of hydrargyrum cum creta, rhubarb, and ipecacuanha, which will promote a healthy state of the mucous surface, and facilitate the evacuation of morbid secretions. If the bowels be only gently open, the circumstance is favourable; but an inordinate action of them must be moderated by the above medicine, or by others hereafter to be mentioned, lest intestinal ulceration and perforation be the ultimate result. At the same time, care should be taken not to produce a sudden change or constipation, otherwise the cerebral or nervous symptoms will generally be much aggravated, and a tendency to effusion on the brain be produced.—*Diaphoretics*, suitable to the state of the symptoms, either variously combined, or associated with diuretics, may be given

from time to time. Of these, the more refrigerant, with small doses of camphor, will be most serviceable; and either some one of those in the Appendix (F. 431. 436. 440. 818. 865.), or the following, may be prescribed:—

No. 225. R Camphoræ rasæ gr. ss.—j; Potassæ Nitratiss gr. iij.; Pulv. Acaciæ gr. ij.; Mucilag. Acaciæ q. s. M. Fiat Pilulæ ij. quartis horis sumendæ.

No. 226. R Mist. Camphoræ 3j.; Liq. Ammoniac Acetatis 3ij.; Ammoniac Muriatis, gr. iv.; Syrup. Limonis 3j. M. Fiat Haustus, quartâquaque horâ capiendus; vel interdum, secundis horis, pilulæ et haustus, alternis vicibus, sumantur.

542. *d.* In the *nervous stage*, the debility is more real; irritability is more exhausted, and the sensorium more severely and uniformly affected. The functions of the skin, and frequently those of the bowels, are also more disturbed than before. The *indications* are to support or stimulate the system, according to the forms the disease assumes.—*Blisters* may be employed in this stage—seldom before. They favourably impress the nervous system, check the tendency to diarrhoea and affection of the intestinal mucous surface, and render the skin more perspirable. They are most serviceable at the commencement of this stage; and are best applied on the nape of the neck, behind both ears, or on the calves of the leg.—*Camphor* is now one of the best remedies that can be exhibited. Whilst it promotes nervous power, it relaxes the skin, and does not increase inflammatory action, but rather tends to allay it, particularly the nervous and cachectic forms of it, which alone can exist in this disease. It should be given in larger doses in this stage, more especially of the malignant or putrid form. From twelve to twenty grains may be exhibited in the twenty-four hours. HILDENBRAND advises, in the latter part of this stage, medium doses of camphor; or one grain every two hours, with an infusion of *arnica* and *angelica root*. He considers that these lessen the stupor, giddiness, and delirium; act favourably on the skin, and prevent the tendency to diarrhoea.—*Emetics* are sometimes beneficial in this stage, when they have been neglected in the previous one, or contra-indicated.—*Purgatives* are of service only when the bowels require assistance. They should be given with the intention of evacuating morbid matters, of preventing the injurious impression made by such matters upon the intestinal mucous surface, and of promoting a healthy action of the abdominal emunctories. Hydrargyrum cum creta, and rhubarb, and the infusion of the latter with the milder saline substances, in a state of effervescence, are the most appropriate. These preserve the tone of the digestive mucous surface, whilst they enable it to throw off fæcal collections. Their action may be occasionally promoted by emollient and gently laxative enemata. I doubt much the propriety of exhibiting *calomel*, or any of the drastic purgatives, in this stage; and I believe that the more active neutral salts exhaust the strength, and produce watery stools, in this period, particularly if they be exhibited in any quantity. It is in the common, or synchoid, form of fever, or at the commencement of this, that they may be employed. In the latter stages of low fevers, calomel and cathartics are apt to increase the intestinal symptoms, or to determine an irritative action of the bowels, liable to terminate in the lesions already noticed.

543. *e.* When the disease has reached its *acme*,

or is approaching the fourteenth day, the treatment should very much depend upon the predominant symptoms, upon what has been already done, and on the effects observed.—If no unfavourable symptoms are present, mild saline *diaphoretics*, as camphor mixture, with liquor ammoniæ acetatis, &c., or the former with the alkaline carbonates, and citric acid, or lemon juice, in effervescence, and mild demulcent diluents, are all that are required. The chief intention at this stage is to favour a genial perspiration. The temperature of both medicines and drinks should not be lower than tepid. If the disease is complicated, particularly at this period, or is proceeding irregularly, the treatment must be varied, as will be hereafter shown. If a crisis take place, or the more urgent symptoms gradually subside, the means should vary with the degree of vital depression evinced. Both tonics and stimulants should at first be mild, in moderate doses, and suited to the state of the pulse, and of the skin and bowels. At first a cold infusion of *cinchona*, or the decoction, may be given with the solution of the acetate of ammonia, or with either of the alkaline carbonates and citric acid, in effervescence. The infusion of *valerian* may also be substituted for the *cinchona*, and given as directed above.—The *regimen*, *diet*, and *convalescence*, should be managed with strict reference to the forms and complications of individual cases, and as will be hereafter shown.

544. *B. The Treatment of the Varieties and Complications of Typhoid Fever.*—*a.* In the *simple typhoid*, or *low nervous fever*, when it commences as described above (§ 469.), the period of excitement being characterised by little or slight reaction, *bloodletting* is seldom beneficial; or local bleeding, in a situation indicated by the prominent affection, will only be required. If the pulse be very rapid, or soft, and open; if the prostration be great, and the tongue assume a dark colour; and particularly if this state exist at the commencement of the disease; vascular depletions will be injurious. The indications enumerated above (§ 132, 133.) will further serve to point out when they may, or may not, be resorted to.—An *emetic* is always of service, particularly if there be nausea; and if vomiting be spontaneous, it should be moderately assisted, as already advised.—The bowels should be evacuated early in the disease by mild *purgatives*. Those already mentioned are the most appropriate, or fresh castor oil may be used. They may be repeated occasionally, with the views I have stated, but with due caution, lest they induce too great exhaustion, or favour the supervention of intestinal disorder.—Whilst the heat of skin continues, *tepid* or *cold sponging* the surface is grateful to the patient, diminishes the restlessness, and favours the operation of *diaphoretics*, during the state.—If diaphoresis occur, it should be promoted by mild, tepid *diluents*, either simple or medicated, in the manner about to be noticed. If copious perspirations occur, especially about the acme of the disease, or at a critical time, they should not be arrested, unless they increase the exhaustion, or are attended by signs of septic deliquescence.—In the *nervous stage*, the treatment directed above should be employed (§ 542.).

545. *a. Prominent affection or consecutive inflammation of the respiratory organs*, in the nervous form of typhoid fever, requires the utmost dis-

crimination on the part of the practitioner, for its successful treatment. The subject has been admirably elucidated by Dr. STOKES, in his truly excellent published lectures on fever. The chest should be carefully examined by the stethoscope, in order to ascertain, as accurately as possible, the state of pulmonary disorder, and to determine whether the symptoms referred to this organ be symptomatic, or dependent upon inflammatory action, or active congestion. The able pathologist just mentioned remarks that, when the bronchial surface is chiefly affected, there is much more lividity of the countenance, than when a portion of the substance of the lungs is diseased. This symptom will generally verify the reports of auscultation. But the treatment will entirely depend upon the nature of the bronchial affection. If the dyspnoea and other pulmonary symptoms depend upon inflammatory irritation, rather than upon increased secretion from the mucous surface; if there be heat of skin, more or less vascular reaction, and if the patient be young and robust; *bleeding*, general or local, will be necessary, according to the severity of the symptoms, and stage of the disease. If, however, these symptoms depend chiefly upon a copious secretion from the bronchial surface, as will be shown by the stethoscope, bleeding will be most injurious, and very decided means of an opposite nature will be requisite, in order to prevent contingent asphyxy. In this latter case, extensive counter-irritation, the *mistura ammoniaci*, or the *decoctum polygalæ*, with *camphor*, *ammonia*, the *tinctura camphoræ composita*, or other stimulating expectorants, must be resorted to, according to the urgency of the case, particularly if lividity of the face exist. When the strength is very much reduced, *wine* will also be necessary, with light nourishment. The temperature of the surface should be kept up. Dr. STOKES very properly directs the patient to be enveloped in soft flannel. When the bronchial affection is more strictly inflammatory, and the secretion does not interrupt materially the functions of the lungs, antimonials may follow the bleeding. But in either case, if the symptoms referred to this organ, particularly the dyspnoea, or the cough, become urgent, and be attended by the tracheal rattle, an *emetic* of ipecacuanha, or of sulphate of zinc, should be immediately exhibited. In this state, Dr. GRAVES, whose extensive resources, in matters of difficulty, I have had frequent occasion to notice, has tried the application of *moxas* in the course of the eighth pair of nerves, and the use of the sulphate of quinine and opium, in enemata; these latter exerting a powerful influence, in his opinion, in lessening excessive secretion from the bronchial surface.—If the substance of the *lungs* be affected, a single moderate bloodletting, or local depletions, may be prescribed, if the patient be robust and the disease not far advanced. If the bowels be not materially disordered, antimonials may afterwards be given; but they should be combined with anodynes. Ipecacuanha, with calomel or camphor, and opium, or extract of poppy, is, perhaps, preferable in most cases.—*Diaphoretics* in frequent doses are always of service, and may be conjoined with diuretics. After depletions have been carried sufficiently far, or if the lungs are affected very late in the disease, *blisters*, *sinapisms*, or the warm *terebinthinated embrocation*, placed on the chest,

and camphor, ammonia, ipecacuanha, or other expectorants, with hyoscyamus, or extract of poppy, are the principal means we possess. When, in this complication, the skin is cool and pale, the pulse very weak and small, and the features collapsed, the warm expectorants, as polygala, ammoniacum, ammonia, camphor, the stimulating tonics, and wine, should be given, according to the peculiarities of the case.

546. *β. Predominant affection of the intestinal mucous surface* should be treated by means similar to those advised in this complication of synochus; and the more especially, as the latter fever, when thus characterised, either passes into, or is very nearly allied to, the typhoid form. In the early stages of this complication, a combination of small doses of hydrargyrum cum creta, rhubarb, and Dover's powder, with compound cretaceous powder, given every three or four hours, is generally of service. If the constitutional symptoms will permit, and if this affection appear at an early period of the fever, a local depletion should be premised, and a blister or sinapism be afterwards placed upon the abdomen. The terebinthinated epithem, applied sufficiently hot, and covered so as to prevent evaporation, if properly managed, is the most efficacious means—more particularly if the abdomen be tense, tender, or tympanitic. In this latter state, an injection with assafoetida, or with the extract of rue, or with from two drachms to half an ounce of spirits of turpentine in addition, will give great relief.

547. In a far advanced stage, *diarrhœa*, especially if attended by tension, pain, or flatulent distension of the abdomen, requires great attention. If the medicines just recommended prove not of service, the *chlorurets*, particularly the chloruret of lime, may be given, with camphor, and extract of poppies, &c. Mucilaginous injections, containing syrup of poppies, or laudanum, or compound tincture of camphor, may also be administered, and a rubefacient epithem placed over the abdomen.—If *hæmorrhage* from the bowels occur, it may be ascribed chiefly to exudation from the softened mucous surface, as shown by the post mortem appearances; and *superacetate of lead* with opium, or acetate of morphine, or extract of poppy, should be exhibited, either in the form of pill, or with the pyroligneous acetic acid, in strong camphor julap. The lead has been recommended, in these cases, by Drs. BARDESLEY, GRAVES, and STOKES. I have resorted to it in these several combinations, and have given it in two or three instances with *kréosote*.—I have likewise employed, by the mouth, and in enemata, the spirits of turpentine, which generally proves the most active remedy of any in such circumstances. In some hopeless cases, it has succeeded contrary to expectations. In one, however, that recently occurred to me, although it arrested the hæmorrhage for a time, there was a return which carried off the patient. If the disease be far advanced, or the powers of life much reduced, the turpentine should be given in small or moderate doses, and its effects carefully watched. I have also prescribed it in conjunction with *kreosote*, the acetate of lead and aromatics, in similar circumstances.

548. *γ. Prominent affection of the brain* may arise in the course of typhoid fever, either from congestion within the head, or from the depressed

state of nervous power, unconnected with inflammatory action, or even with vascular determination. This circumstance, long believed by pathologists, has been fully confirmed by M. LOUIS, who found, that the presence or absence of delirium has little or no connection with perceptible organic lesion of the brain. If, however, there be increased heat or severe pain of the head, spastic contractions of some muscles, flushed face, injected eyes, or other indications of active disorder of the cerebral circulation, particularly in the stage of reaction, the hair should be removed, and local depletion resorted to. The head ought to be kept cool, by cold sponging, or lotions. If delirium be attended by these symptoms, the same means are required; and, if it be, at the same time, low, insensible, or muttering, a blister should be applied to the neck and nape, or behind the ears, or to the calves of the legs, or a sinapism may be substituted in the latter situation. Whenever the affection of the head is connected with increased determination to it, especially in an early stage, stimulating antispasmodics, as ammonia, musk, or camphor in large doses, cannot be of service, and may be injurious. The last of these, however, may be used in small doses with nitre, and it may be increased according to the degree of stupor, and coolness of the scalp. If the delirium depend upon exhausted nervous power—if it be attended by stupor; by a weak, soft and very quick, or somewhat slow pulse; by a moist skin, or copious perspiration; or by extreme prostration, particularly after the eighth or tenth day, or in the nervous stage; camphor in doses of from one to three or four grains every two, three, or four hours; or the preparations of *valerian*, or of *serpentaria*, or of *arnica*, or *ammonia*, or of *ether*, or *wine* or *opium*, may be severally employed as circumstances will suggest. In other respects, the treatment of this state, and of sopor and coma, its frequent attendants and sequents, should be directed, as explained in the articles COMA (§ 16. 19.), and DELIRIUM (§ 16, 17.).—*Retention of urine* is very apt to occur in this state; therefore, in it especially, but also in all others, attention ought to be paid to the circumstance. If an undue accumulation of water in the bladder be detected upon examining the hypogastrium, it should be immediately drawn off.

549. *δ. In the most severe form of nervous fever* (§ 476.), bloodletting is seldom of service, unless at the commencement of reaction, or from the vicinity of the most affected organ. When the skin is very hot, *tepid sponging*, *diaphoretics*, *external derivatives*, and *emollient diluents*, with *nitre*, or small doses of the *muriate of ammonia*, are the most appropriate. The infusion of *valerian* may be given as the disease passes into the nervous stage, either with the *ammoniated tincture* or with camphor, and *muriatic ether*, or other stimulants.—HILDENBRAND advises the *arnica montana* with camphor, in this state.—If exhaustion increase, and coma come on, these medicines, or others of a similar kind, may be prescribed in larger doses, or at shorter intervals; and a blister applied to the vertex, or occiput, or to the nape; or a large sinapism to the epigastrium, or insides of the legs. LALLEMAND and MACKINTOSH have adduced instances of benefit, in the comatose state, from pouring boiling water on the lower

extremities. *Musk*, the *ethers*, preparations of *cinchona*, or any of the stimulants already mentioned, may likewise be tried, in various combinations, in this stage; or an infusion of *green tea* may be given in the usual manner.

550. *ε*. If the disease be sudden in its attack, or *apoplectic*, care should be taken to ascertain whether or not this character arise from weakened nervous energy of the brain, or from vascular congestion. When a pale, collapsed countenance and eyes, weak and small pulsation of the carotids, and coolness of the scalp, indicate the former, restoratives will be necessary. But, when there are increased temperature of the head, and excited action of the carotids, although the countenance be pale, a small or moderate bloodletting, local or general, or even a cautious repetition of it, in young or robust persons, will generally be required.—The same remarks equally apply to the occurrence of *paralysis*. If the paralysis appear at an advanced stage, even local depletions may be injurious. In this case, we must trust chiefly to blisters and other external derivatives, and to the means already stated (§ 548.).

551. If, in the early stage of this, or, indeed, of any other form of typhoid fever, the thirst be urgent and attended by vomiting, desire of cold fluids, and heat of skin, stimulants are generally injurious. If tenderness of the epigastrium accompany these, inflammatory irritation, or erythema, of the gastro-intestinal mucous surface should be inferred. In this case, *leeches* ought to be applied; and cold or iced drinks, and saline medicines, particularly the nitrate of potash, or the muriate of ammonia, frequently exhibited. A combination of camphor mixture, the solution of the acetate of ammonia, nitrate of potash, and spirits of nitric ether, will generally be serviceable in these circumstances. Effervescing draughts are productive of little benefit, as the extrication of fixed air distends the stomach, and either causes it to react upon, and throw off, its contents, or gives rise to much distress and pain. If irritability of the stomach still continue, a large blister may be applied over the epigastrium. Dr. STOKES advises, in the more obstinate cases, the raw surface to be sprinkled with a small quantity of the acetate of morphine. I have rarely found the warm turpentine embrocation fail of removing this state of disorder, when properly employed.

552. *ζ*. When *singultus* occurs in the stage of reaction, it is generally connected with the foregoing state of the stomach, and particularly with irritation about the cardiac orifice. In this state, the treatment just advised is the most appropriate. When it appears in the nervous period, or later, it depends upon exhausted nervous energy; and requires stimulants, antispasmodics, and anodynes. Camphor, ammonia, the ethers, musk, valerian, opium, and their preparations, variously combined, are the most serviceable.

553. *η*. *Diarrhœa* is one of the most frequent precursors of disease of the intestinal mucous follicles; yet should it not be rashly interfered with, and still less abruptly arrested, particularly when it occur early, or at a critical period. I have imputed the affection of the intestinal mucous surface in great part to the morbid condition of the blood; this surface being one of the channels by which effete, or injurious materials, pass out of the circulation during the course of fever. It is

evident, therefore, that if we shut it up, without opening others, the alterations of the blood will increase, and occasion serious organic changes, and ultimately a fatal issue. The most rational procedure, when diarrhœa is an early complication, is not to interfere with it, unless it become severe, or continue long; and then it should be moderated rather than arrested, and by such means as will increase the depurating functions of the skin, the kidneys, and liver, and remove the irritation excited in the digestive mucous surface and follicles. The remedies most likely to produce these effects, are actually those which have been found most serviceable in this state of disease. Hydrargyrum cum creta, compound ipecacuanha powder, camphor, nitre, mild anodynes, variously combined with demulcents, emollients, and diluents, are the most generally of service. In more advanced states of this complication, and in later stages of fever, those medicines which have been already noticed (§ 156.), as well as some about to be mentioned, may be resorted to.—When the pulse is small, very frequent, and weak, and the strength exhausted, diarrhœa must then be arrested, otherwise it will speedily terminate life. Astringents, opiates, absorbents, restoratives, wine, &c., are all requisite in this case.

554. *θ*. *Tympanitic distension* of the abdomen may occur early in this fever, and be attended by thirst, by a desire of warm diluents, by tenderness on pressure, particularly in the lower part of the right side of the abdomen, and by diarrhœa. When these symptoms are present, disease of the intestinal mucous follicles may be inferred. In this case, a number of leeches, according to the strength of the patient, and stage of the fever, should be applied, and followed by the warm turpentine embrocation on the abdomen. If tympanitis and diarrhœa appear late in the disease—particularly if the stools be foul, watery, or mucous—ulceration of the intestinal surface should be dreaded, and the means already advised (§ 156.) should be resorted to; or the chlorurets given in the infusion of valerian, or in emollient vehicles, with camphor, anodynes, &c. From one or two to four or five drachms of spirits of turpentine may be prescribed once or twice, or even oftener in some cases, in a suitable vehicle, if these fail; or this substance, or assafoetida, or extract of rue, with some anodyne, may also be administered in mucilaginous enemata from time to time. In most cases of flatulent distension of the intestines, there is great disposition to ulceration of the aggregated mucous follicles—if, indeed, it has not already commenced; and both morbid conditions are greatly aggravated by the continuance of the flatulent state. The *intention*, therefore, is to procure the discharge of flatus, by means which may at the same time sheath and soothe the irritable mucous surface, and restore the lost tone of the capillaries of the diseased part; and, whatever operates in this way, will be productive of benefit. It is only by a judicious combination of agents, that this effect can be attained; and those just mentioned seem the most efficient, especially when the skin is cool, the pulse feeble, and the prostration extreme; and, in this state, the more energetic stimulants and tonics, or wine, or opium, may also be employed, according to the peculiarities of the case. (See § 155—159.)

555. *a.* The occurrence of *perforation of the intestines*, and consequent *peritonitis*, should not be overlooked in the enteric complication, or other severe forms of low nervous fever. Peritonitis seldom arises except from this cause, for large patches of the mucous surface, with PEYER'S glands, may be destroyed by ulceration; and yet the peritoneum will be unchanged. When, however, diarrhoea has been suddenly arrested early in the disease, by an injudicious use of astringents, general peritonitis and effusion may result, without perforation, and even without ulceration. But this is only one of several bad consequences which may proceed from injudicious interference. If, in an advanced stage of fever, and after thirst, diarrhoea, tympanitis, and great prostration of strength, the patient suddenly complain of pain in some part of the abdomen, extending over it, with tenderness, increased distension, and rapid sinking of the powers of life, peritonitis has occurred. In this case, large doses of opium, to palliate the patient's sufferings, are the only means that can be used with any benefit. — Dr. STOKES, who has very ably elucidated the subject of peritonitis from this cause, and its treatment, directs one grain of opium to be given every hour, or two hours, until a decided effect is produced by it; and afterwards at longer intervals. (*Dublin Hosp. Rep.* vol. v.; and *Dublin Jour. of Med.* vol. i. p. 125.) When effusion of the intestinal contents into the peritoneal cavity occurs, the result must be fatal. But when adhesion of the peritoneum to the opposite surface takes place previously to the perforation, or when the perforation is speedily followed by a limited inflammation and effusion of lymph, recovery is possible. The formation of coagulable lymph can hardly, however, be expected in peritonitis occurring in the course of fever; as the states of vital action, and of the circulating fluids, are generally incapable of producing it.

556. *b.* *Treatment of putro-adyynamic fever* (§ 484.).—The phenomena which especially characterise this variety, may appear either at an early stage of fever, or at an advanced period,—they may be the concomitants, or early consequences, of depressed vital energy, and imperfect powers of reaction; or the results of vascular reaction being so great, relatively to the state of vital influence, as to exhaust both the irritability of contractile parts, and the tone of the extreme vessels. In either case, alterations of the circulating fluids, and deficient vital cohesion of the soft solids, speedily follow, and coexist with these changes. In conformity with this view, with the pathological facts stated above (§ 529.), with a recognition of the characters of epidemics which have been observed in modern times in different countries, and with the results of personal observation, it may be safely inferred, that the treatment of this fever should mainly depend upon the state of vital action early in the stage of excitement, and the period of the disease in which the putro-adyynamic signs appear; and that, in a practical point of view, it will be, therefore, advantageous to divide this variety of typhoid fever into—1st. The *consecutive putro-adyynamic*, or that form which is contingent on more or less manifest reaction; and, 2d. The *primary putro-adyynamic*, or that which is attended by imperfect, or no, reaction, and in which the characteristic pheno-

mena appear early in the disease. It should, however, be recollected, that both these forms may occur in the same epidemic, or that either may predominate; and, moreover, that the first or contingent state of putro-adynamia is sometimes met with in all epidemics, whether the fever be common synchoïd, typhoid, or exanthematous, owing to the causes stated above, and with a frequency relative to the prevalence of these causes (§ 468.).

557. *a.* The *stages of premonition* and of *invasion* of this variety, are scarcely different in their characters from those announcing nervous or typhus fever. The same means as have been advised above (§ 540.) may, therefore, be resorted to, with the intention of preventing the further progress of disease, or of rendering it more mild.—When the symptoms of invasion are either indistinct or protracted, the consequent fever is often rendered much less dangerous than it otherwise might have been, by the adoption of the measures already detailed, and more particularly by exhibiting an energetic *emetic*, and by promoting its full operation by warm or tepid mucilaginous diluents. Tepid *sea water*, or a weak solution of common salt in a tepid state, has been employed with advantage, for the purpose either of promoting the action of the emetic, or of producing full vomiting, when there has been nausea or sickness.

558. *β.* In the *consecutive putro-adyynamic*, or when the *stage of excitement* is more or less developed,—when the pulse is frequent, full, or sharp; the skin hot, and thirst considerable, or if an internal heat be felt; vascular depletion may be practised, but with due reference to the circumstances of the patient, and to the period which has elapsed from the time of invasion. So long as the characters of putro-adynamia have not appeared, these symptoms fully warrant a cautious recourse to depletion; and in young robust persons, even a repetition of it.—If rigors and shiverings are followed by inordinate or tumultuous reaction, the necessity of larger depletions is obvious. But, even in this case, they should not be carried too far, or to the extent of producing syncope; otherwise, in attempting to avoid the exhaustion consequent upon excessive action, a quantity of blood may be withdrawn, too great for the diminished power of tonic contraction possessed by the blood-vessels,—the vessels being incapable, owing to the loss of their tone, to accommodate themselves to, or contract sufficiently upon, their contents, when the reduction of these contents is great,—and thus collapse of vascular action, and of vital power, may follow.

559. *γ.* In the *primary putro-adyynamic*, or in cases attended by indistinct signs of invasion, and by imperfect reaction, we can hardly venture upon depletion, unless indications of congestion or prominent affection of an important organ present themselves. In this instance, local depletions, or dry cupping, may be tried. If petechiæ appear early in these cases, or if the pulse be very compressible, very small, or broad and open; if the skin be cool, damp, or unnatural, yet not hot; if the tongue be flabby, or covered by a dirty mucous, although the fever is evidently not far advanced, or is very recently passed the stage of invasion; then bleeding should not be attempted. In this case, very different means must be em-

ployed; and with an energy proportionate to the prostration of strength attending these symptoms. If petechiæ, or vibices, or blotches, have appeared on the skin, they will furnish an additional indication, particularly if they assume a dun, or dark, or livid colour; and will indicate the propriety of having recourse to the tonics, stimulants, and antiseptics, and the combinations of them, about to be noticed.

560. *δ*. In *either form* of this fever — in the *first*, after depletions, in the *second*, after the operation of an *emetic*, which should be given at any time during the invasion, or for three or four days afterwards — the bowels ought to be freely evacuated, by either of the mild *purgatives* mentioned above, and by the occasional use of laxative enemata; and frequent but small doses of *nitre* may be afterwards exhibited in the saline medicine already prescribed, or of the *muriate of ammonia*, in camphor mixture, or any other suitable vehicle. These latter are more especially indicated, if any heat is felt in the region of the stomach, and if the tongue is red at its edges and point. If there be increased heat of skin, tepid sponging the surface with the weak nitro-muriatic solution, or with a mixture of pyroligneous acetic acid, rose water, and camphor mixture, will prove both grateful and beneficial. — It is seldom, even in the primary putro-adyndamic, that *tonics* are productive of much benefit very early in the disease. But, when exhibited with *refrigerants*, they are often of great service. The infusion or the decoction of cinchona, either with the solution of the acetate of ammonia, and nitrate of potash, or with the muriate of ammonia, a few drops of muriatic acid, and sometimes also with muriatic ether, is the kind of tonic which I can recommend from experience, as being the most suitable to an early stage of adynamic fever.

561. It is in this variety of typhoid fever, more especially, that the question as to the superior efficacy of alkaline medicines and of the non-purgative salines, or of mineral and vegetable acids, becomes a matter of extreme importance. Of the latter I can speak from observation; of the former I have not yet made sufficient trial to enable me to form a satisfactory opinion. It were to be desired that Dr. STEVENS, who has so strongly advocated the use of alkaline and saline substances in this fever, would furnish us with that sort of evidence of their efficacy, which would justify an early and decided recourse to them; and that those, who have ample means furnished them of settling the question at issue, would at last put it beyond the reach of cavil. That these substances are beneficial, at least several of them, is fully shown by the experience of successive ages and of numerous writers. This is the case in respect of nitre, muriate of ammonia, and chlorate of potash, of the excellent effects of which I am convinced by repeated observation. But the superiority of alkaline subcarbonates over acids, has not yet been proved. It is also doubtful, whether or not the benefit found to result from the former has not chiefly proceeded from the medicines with which they have been combined. At present we are guided in some measure by what we know of the physiological action of these substances. The fixed alkaline carbonates redden the blood when carried into it; but they relax the tone of the digestive

mucous surface. Nitre produces a similar change in the blood, and resists any tendency to decomposition. Acids constrict the mucous and contractile tissues, impart firmness to the coagulum, but render the blood more dark than natural. With these imperfect data, the experience derived from accurate observation ought to be our chief guide: and whether we adopt acids, in the earlier stages of the disease, and alkalies subsequently, or reverse this order, or even prescribe, in conjunction with neutral salts, either an acid, or an alkali in excess, much difficulty will be felt in ascertaining how much is due to either of these means, and what may be legitimately imputed to other remedies, with which we may be morally bound to combine them, in order to render their beneficial operation more certain. When certain remedies, which have been particularly recommended in this form of fever, come under review, these substances will receive further attention.

562. In various states of putro-adyndamic fever, *external derivatives* will be required, as in the other varieties. When bloodletting is necessary at the commencement, they should follow this operation, particularly when prominent affection of an important organ exists. As to the choice of derivatives, little need be added to what has been already advanced. If blisters be adopted, attention is sometimes required to prevent spreading or sphacelating sores. They should, therefore, be applied only until they cause redness of the surface; when they may be followed by a warm poultice. Equal care is necessary to prevent sphacelation of the parts pressed upon in bed, and the occurrence of foul sores, from the contact of the morbid excretions, or from both causes conjoined. The means likely to counteract or remedy this occurrence have been stated above (§ 166.).

563. *ε*. In the *modifications* of this fever, noticed above (§ 488.), a decided recourse to the same medicines as are necessary in the advanced stages of the regular form, must be had, more particularly when signs of colliquation are early and prominent. The intention in this case is to arrest the progress of the changes of the blood, by supporting the powers of life, and promoting the functions of excretion. If it should be found possible to correct, in a more direct manner, the state of the circulating fluids, this indication ought also to be adopted, and the means which operate in this way resorted to. In conformity with the former indication, full vomiting should be induced, if it have not already taken place, and a mild stomachic purgative afterwards given. This latter ought to be repeated, according to the state of the bowels, and the appearance of the evacuations, which will furnish indications for the employment also of enemata, and indicate such as are most appropriate. In the worst forms of erysipelas, and in diffusive inflammation of cellular structures, I have found equal parts of the decoction of cinchona, and the compound infusion of senna, with tartrate of potash, subcarbonate of soda, and compound tincture of cardamoms, an excellent purgative, and I see no reason against its use in this state of adynamic fever. After the bowels have been freely evacuated, decoction of cinchona, or a strong infusion of valerian, with chlorate of potash, and chloric ether, may be prescribed, according to the severity of the disease. Of the good effects of the decoction

tion of cinchona with the compound tincture, nitrate of potash, and subcarbonate of soda, I can also speak from experience. When the prostration of strength is extreme, a pill containing two or three grains of camphor should be taken with each dose of either of these, at short intervals.

564. Other tonics, and different combinations of them from these now mentioned, will frequently be productive of great benefit, when morbid excretions have been evacuated. However specious the arguments adduced by some writers against the employment of *acids* in the putro-adynamic states of fever, it cannot be denied that good effects have been produced by them, especially when exhibited with powerful tonics. The infusion or decoction of cinchona, with muriatic acid, or with nitro-muriatic acids, and chloric ether (formerly CLUTTON's febrifuge); the sulphate of quinine with sulphuric acid, and HOFFMANN's anodyne; and pyroligneous acid in large doses, with camphor, the solution of the acetate of ammonia, and tonic or aromatic infusions, or the infusion of serpentaria or of arnica, are the most energetic, and may severally be tried, according to the peculiarities of the case. A solution of camphor in acetic acid was a favourite medicine with many writers on putro-adynamic fever, and was employed by them both internally and externally.

565. Dr. STEVENS's saline treatment is most appropriate in this form of fever. He directs twenty grains of the muriate of soda, thirty grains of the subcarbonate of soda, and eight of the chlorate of potash, to be given every two or three hours — or more or less frequently, according to the urgency of the case — dissolved in water, in the advanced stages. He believes that, when these salts are prescribed before the stomach has ceased to perform its functions, they will not irritate the alimentary canal, but will be absorbed into the circulation, and correct its morbid state. One or two table-spoonfuls of common salt may also be administered occasionally in a tepid gruel enema. The strength should, at the same time, be supported by strong beef tea, or the regimen about to be recommended.

566. ζ. If putro-adynamic fever be attended by *predominant affection* of any organ, local depletions, followed by external derivatives, will be necessary, particularly in an early stage of the fever. — At a later period, external derivation, and the other means advised for the complications of nervous fever, according to their seat, should be employed. In this variety, however, a more liberal use of tonics, conjoined with the antiseptics just mentioned, is generally required. — When this or any other form of typhoid fever is complicated with *asthenic inflammation of the fauces or pharynx*, or both, the means already recommended are quite appropriate. In these cases, deglutition is very difficult, and sometimes impossible. Recourse to external derivatives, and to injections, is then urgently required. The action of the bowels should also be solicited by purgative enemata, unless diarrhoea exist; and the medicines that are indicated should be administered in clysters, and in sufficiently large doses. As the patient is generally unable to gargle his throat, advantage will sometimes accrue from syringing it with any of the tonic mixtures above prescribed, or with a solution of the chloruret of lime or of kréosote; and if a part, or the whole, or either

of these, should be swallowed, the more benefit will be derived.

567. η. If this variety become complicated with *diarrhoea*, disorganisation of the digestive mucous follicles and surface will rapidly take place, if the treatment be not prompt and judicious. The means already advised (§ 546. 447.) for this complication must be adopted in this case. If the diarrhoea occurs at an early period, it will generally be moderated by tonic infusions, with the nitrate of potash, or with the muriate of ammonia, and the compound tincture of camphor. A combination of ipecacuanha, nitre, camphor, and opium, or extract of poppy, will also often diminish or remove it. If *hæmorrhage* supervene from the bowels, these medicines will sometimes be sufficient to remove it. In more urgent cases, the energetic remedies previously directed (§ 547.), or the pyroligneous acetic acid, with camphor and kréosote, or turpentine, &c., should be prescribed by the mouth, and in enemata. When diarrhoea or hæmorrhage characterises putro-adynamic fever, the alkaline subcarbonates will frequently aggravate or perpetuate it, and render convalescence protracted. In other respects, the treatment directed for the complications of nervous fever, and for its last stages, is also suitable to this; these stages requiring either the measures just described, or several of those about to be noticed, with a more or less direct reference to the putro-adynamic state, or various combinations of the substances already enumerated (§ 548—555.).

568. c. *Treatment of Exanthematous Typhus* (§ 497.). — The *premonitory* and *invading periods* of this fever should be treated as recommended above (§ 540.), with the view of arresting or rendering more mild the procession of morbid phenomena. — a. In the *stage of reaction*, the indications are — (a) to moderate excessive excitement; (b) to guard important organs from the effects of prominent action. — If full vomiting has not occurred previously, it should be excited by an emetic, at the commencement of this stage, or on the first, second, or third, day of it. If, however, inflammatory signs have become evident, particularly if the lungs are affected, a moderate *bloodletting* should precede the emetic. The eruption, which generally appears in this period, is usually followed by slight alleviation of the symptoms, and should therefore be promoted by mild, tepid diluents, which may be made either diaphoretic, mucilaginous, or acidulous, according to circumstances. As to *bloodletting* in this disease, it is pernicious in many, if not in most cases; and not merely in the nervous, but even in this stage. In the mild and regular typhus, it is superfluous: but when a highly inflammatory character marks this period, or when local action becomes very prominent or excessive, it must not be omitted; otherwise the local affection may run into disorganisation, and the nervous stage will be rendered more protracted or dangerous. The amount, repetition, and mode of depletion, will depend upon the peculiarities of the case. — When the bowels are open in this stage, *purgatives*, unless of the mildest kind, are unnecessary. Severe purging is prejudicial, as it derives from the skin, interrupts the regular course of the disease, and risks the production of the enteric complication. Tonics and stimulants are also injurious.

569. *β*. In the *nervous stage*, the disease has induced a state of exhaustion; and the system requires to be supported, and even gently excited. HILDENBRAND recommends an *emetic* early in this period, if it have not been given previously; and *blisters* to be applied, about the seventh or eighth day, when the nervous stage commences. *Camphor*, with the solution of the *acetate of ammonia* and *nitre*, forms one of the best medicines that can now be exhibited. The quantity of camphor, however, should not at first exceed one grain every two hours, or a grain and a half every three hours. — *Arnica* was one of the medicines most commonly employed in Germany during the prevalence of this fever in that country, early in the present century. HILDENBRAND states, that its operation is stimulant, alterative, and, in large doses, emetic; and that it does not promote, but rather prevents, diarrhoea. In typhus, it lessens the stupor, giddiness, and delirium, and increases the cutaneous transpiration; but it is useful only when the inflammatory character is quite gone. It should be given in the form of infusion, in a quantity short of producing nausea. This most able and experienced writer advises also, in the course of this stage, the use of volatile stimulants, especially the infusions of the roots of *angelica* and *imperatoria*, and of the flowers of the *calamus aromaticus*.

570. In the typhus epidemic, in the military hospitals in Vienna and surrounding countries, during the late war, where it was impossible to prescribe for the cases individually, the following plan was pursued by HILDENBRAND, with great success, in the simple and regular disease: — On the first day of the fever, an emetic was administered, and succeeded by diluent diaphoretic decoctions. About the seventh day, when the typhomania and debility were increased, the skin and tongue dry, and the belly distended, blisters were put on the calves of the legs, and eight ounces of an infusion of two drachms of the flowers of *arnica*, and as much *angelica* root, with a little of HOFFMANN'S anodyne, were given daily, two table-spoonfuls being taken every two hours, alternately with camphor powders. — Stimulants, in this fever, should be prescribed in frequent but small doses, rather than in large quantities. Cinchona and other tonics are superfluous as long as the disease is mild and regular. But they, together with wine, &c., are required, if the putro-adynamic state appears in this stage.

571. *γ*. If the preceding stages have been prudently treated, and if the disease has been regular and mild, nothing more is necessary in the way of medicine, as the *period of crisis* approaches, than to promote the evacuations attending it; and, as the chief of these is perspiration, mild diluents, and the diaphoretics in common use, or those just mentioned, are to be continued. All medicines should not be abandoned immediately after a crisis. Stimulants, however, should be milder, and given at longer intervals. HILDENBRAND advises the camphor and *arnica* to be given up, and the infusion of *angelica* to be continued for some time. As *convalescence* advances, the treatment should be chiefly dietetic and regimenal.

572. *δ*. The *irregular forms of typhus* — the modifications and complications — require appropriate means, or variations of the procedure now recommended. — If the *inflammatory character* is violent,

a more active antiphlogistic treatment is necessary. But the existence of deficient power, and the knowledge that the nervous stage must follow, should influence the practitioner. For an inflammatory state of the brain, or the semi-apoplectic state, bleeding generally and locally must be adopted, to an amount which the circumstances of the case will suggest. When the lungs are affected, this practice, aided by antimonials, blisters, and diaphoretics, is equally necessary. If the inflammatory state be not entirely removed, and if it is not safe to bleed more, or if this state be prolonged into the nervous stage, external derivatives and antimonials are to be chiefly confided in. The same practice is applicable to the association of *hepatic disease* in this stage. The affection of the intestinal mucous surface requires the same treatment as was recommended in synchoid and nervous fevers (§ 546. *et seq.*) — Sometimes the *gastric* or *bilious* character predominates, particularly in summer and autumn, owing to impurities in the *prima via*, and accumulations of bile in the hepatic ducts and gall-bladder. Emetics are necessary in these cases especially, unless there are indications which forbid them; and mild purgatives, in the inflammatory stage — in the nervous, aperient clysters — should be preferred.

573. *ε*. In the nervous stage various irregularities often occur. If this character is excessive, or has taken place suddenly, large and repeated doses of volatile stimulants are necessary. Camphor, ammonia, ether, musk, cinchona, serpentaria, wine, opium, and blisters, are severally useful, when judiciously combined. Phosphorus has been recommended for this state, but HILDENBRAND found it useless. During this stage, a passive, asthenic, or nervous, kind of inflammatory action may occur, particularly in the mucous surface of the intestines and in the mucous follicles; but it sometimes also affects the brain and lungs. When it attacks the *intestines*, there is a painful feeling excited by pressing the abdomen; the pulse is small and irregular or unequal; the belly is tympanitic or tense; and the stools very frequent and morbid. For this state, a moderate or small local depletion; blisters, sinapisms, or hot turpentine embrocations, followed by warm poultices, over the abdomen; camphor, with hydrargyrum cum creta, and DOVER'S powder, in large quantities of mucilage; or camphor with ipecacuanha, nitre, and opium; mucilaginous enemata, with extract of poppies, &c.; and the other means already mentioned (§ 547.); should be chiefly relied upon. If this form of inflammation, or of inflammatory congestion, attack the *liver*, tenderness and fulness in the right hypochondrium, and jaundice, generally accompany it, and a very dangerous complication results. Local depletion is sometimes of use, but as frequently it is of little service. Mercurials, excepting, perhaps, the hydrargyrum cum creta, are still less efficacious. Blisters over the hypochondrium and epigastrium; frictions with rubefacient liniments in this situation; rubefacient applications on the insides of the thighs; emollient and aperient enemata, if the bowels require to be assisted; camphor, with nitre, or sulphate of potash, and anodynes; diuretics conjoined with mild diaphoretics; and the nitro-muriatic acid given internally with the spirits of nitric ether, or used externally as a lotion or wash; may severally be productive of benefit.

574. *ζ*. The nervous inflammation of the *brain* is indicated by sopor and profound typhomania, and should be combated by blisters on the head; by camphor, by arnica, and the means directed for this affection in nervous fever (§ 548.). If tightness of the chest and dyspnoea occur in the nervous stage, congestion of the weakened vessels of the *lungs* may be inferred. In this state, a small bleeding, to the amount of four or six ounces, may be directed in some cases, and followed in all by blisters on the chest, and antimonials conjoined with camphor.

575. *η*. If the *putro-adyamic character* supervenes and predominates as the nervous stage proceeds, the debility, equally with the morbid state of the blood, requires attention. The preparations of cinchona, either with mineral acid, or with alterative neutral salts, large doses of camphor, wine, opium, and the other means directed for the various phases and complications of this condition, will be required according to the peculiarities of individual cases. If *diarrhœa* or *dysentery* comes on in this state, opium in large doses, but at distant intervals; warm dilute wine, with spices and other aromatics; mucilaginous and farinaceous liquids, or gruel, with common salt, taken in small quantities but often, and administered in enemata, with syrup or extract of poppies; and the other remedies noticed above (§ 553.); should be prescribed. — If *singultus* or *meteorismus* occur, they should be treated conformably with the principles already explained (§ 554.). — Swellings of the parotids are unpleasant accidents, even when critical. They should be checked at first by keeping the bowels moderately open, and cold applications to them. If this end be not accomplished, then suppuration should be promoted by stimulating poultices; and the abscess should be early opened, in order to prevent contamination of the surrounding cellular parts. If gangrenous sores appear in any part, the means directed above (§ 166.), more particularly the chlorides, *kréosote*, powdered bark, turpentine, &c., either severally, or variously combined, or in the form of wash, epithem, or poultice, ought to be promptly and assiduously employed.

576. *iii. Of certain Medicines, &c. in Typhoid Fevers.* — *a. Antimonials*, especially JAMES'S powder and tartar emetic, are frequently of service in the early stages of fever: the latter for its emetic operation, and its febrifuge or contra-stimulant action during excitement; and the former for this last effect, in connection with its diaphoretic influence. The remarks already offered respecting these medicines (§ 162.) are applicable to the use of them in the fevers under consideration. It is chiefly in the early periods, in the more inflammatory states, in the pulmonary complications, and either in aid of, or as substitutes for, bloodletting, that they should be employed, more particularly tartarised antimony. However, the results of RAZOR's practice, and the recent trials made of this medicine by Dr. GRAVES, in the advanced stage of typhus, indicate the propriety of having recourse to it, at a later period, in much more liberal doses than have been hitherto considered safe. This able physician, reasoning from the good effects of the medicine in delirium tremens, was induced to resort to it in a case presenting a quick, failing pulse; a black, dry, tremulous tongue; tympanitis; low, muttering deli-

rium; startings of the tendons, and nervous agitation. He prescribed four grains of tartar emetic, in eight ounces of camphor julap, with a drachm of tincture of opium—a table-spoonful to be taken every second hour. The patient vomited after the second dose; and, after the fourth, he fell into a calm sleep, and soon recovered. Besides the good effect of this medicine, that of vomiting at this stage of fever, as recommended by many of the older writers, is shown by this case. Dr. GRAVES refers to other instances (*Lond. Med. and Surg. Journ.* vol. vii. p. 541.), in which tartar emetic and opium produced decided benefit, in most unfavourable states of the advanced periods of low nervous fever, and of exanthematic typhus. The combination of tartarised antimony with nitre is most appropriate in the stage of excitement; but, in the nervous stage, opium seems indispensable to the good effects of the antimony.

577. *b. Of other antiphlogistic and contra-stimulant means*, it is unnecessary to add any thing to what has been already advanced. The contradictory opinions entertained as to the propriety, or amount, of depletion are readily explained, when the various forms of typhoid fever, and circumstances of the case, are taken into consideration, in connection with the intentions with which *bloodletting* on the one hand, and *restoratives* on the other, are resorted to; and with the fact that both are very frequently required, not only consecutively but even simultaneously. This circumstance was well known to very many of the numerous writers on these fevers during the three last centuries, both in this and in foreign countries. They well knew and strenuously inculcated the fact, even as late as the days of CLARKE, that, in order to prevent the accession of the putro-adyamic state, it is necessary to bleed, and to use other antiphlogistic remedies, with decision, early in various fevers and epidemics. And next to bleeding, *nitre* and the *muriate of ammonia* were held in estimation, for their effects in lowering morbid reaction at the commencement of typhoid fevers, and in preventing putridity in advanced stages. Thus, whilst *nitre* was conjoined with antimonials, ipecacuanha, small doses of camphor, or with the spirits of nitric ether, to fulfil the former intention, and to promote perspiration and the action of the kidneys, it was given with tonics and stimulants, to produce the latter indication. The writings of DELIUS, HILLARY, HAENEL, WOOD, RAZOR, and many others, show us how very little we have hitherto improved upon their practice in these fevers. The same remark applies to the use of the *muriate of ammonia*, whose operation as a refrigerant, antiseptic, and tonic ranks it as one of the best and most generally applicable of the many remedies employed in fever.

578. *c. As to the use of alvine evacuations*, we have arrived at similar conclusions to those very generally acted upon during the seventeenth and eighteenth centuries, but partially lost sight of towards the close of the latter.—The good effects of *emetics* at the commencement of typhoid fevers were almost universally admitted, until BROUSSAIS banished them from his code of therapeutics.—That circumstances sometimes sometimes occur, which either render them unnecessary, or even forbid them altogether, has been allowed; but

very sufficient evidence has been adduced of their good effects, more particularly in the periods of premonition and invasion, and even early in that of excitement. Many writers of great experience, especially CHEYNE, TUOMY, STOLL, SANDIFORD, REIL, HILDENBRAND, HUFELAND, &c., have advised them in the advanced stages of these fevers; and, although they are rarely employed in these periods by practitioners in this country, I believe that they will often prove of service even then, when judiciously resorted to, in exanthematic typhus. The injurious effects imputed to them by MARCUS, WENDELSTADT, BROUSSAIS, and others, are to be referred to the employment of them in the gastric complication, and in other circumstances which contra-indicate their use.

579. The operation of *purgatives* in low fevers is now well understood; the indiscriminate use of them encouraged by the writings of HAMILTON having been checked and tempered by the partial adoption of the views of BROUSSAIS. And yet I believe that the particular state of the intestinal mucous surface that exists in these fevers may be increased by a neglect of this class of medicines; and that, when appropriately combined, many of them are calculated to prevent, or to alleviate, the morbid condition which the disciples of BROUSSAIS imagine them to produce. — A tolerably active purgative early in excitement, or in the other circumstances above noticed, both lowers excessive action, and removes morbid excretions, which, if allowed to remain, would prove a cause of irritation and contamination to the frame. In cases, however, where the vascular excitement is attended by vital prostration, either early or late in the disease, the use of purgatives requires much caution. When excitement is considerable, *calomel* with jalap, or with rhubarb, will be given at first with advantage; but, in other circumstances, the calomel should be withheld. When, with excitement, there is considerable pulmonary affection, the tartrate of antimony may be added to the purgative adopted, as advised by Dr. M'CORMAC, and indeed very generally adopted in practice. But when vital depression is the predominant feature of the disease, we should be as cautious in the use of purgatives, as in having recourse to bleeding. The evacuation of the serous portion of the blood by means of the former, is nearly equally depressing with the latter operation. In the advanced stages, and especially when putro-adyynamic signs begin to appear, the blood-vessels, owing to the loss of a great portion of their tonic contractility, cannot accommodate themselves to the evacuation of much of their contents, in whatever way it may be effected; for the column of blood in the vessels is no longer presented to the contraction of the ventricles in that state of tension, which favours its healthy circulation. If the bowels, however, require the aid of a purgative, during a state of prostration, it ought not to be withheld; but it should be so selected, as to produce no greater evacuation than may appear requisite, and be so combined as to leave a tonic or salutary impression upon the digestive mucous surface. In such cases, equal parts of the compound infusions of gentian and senna, or an infusion of cinchona and rhubarb, or the compound decoction of aloes, or rhubarb and subcarbonate of soda, or the purgatives already mentioned (§ 150,

151.), or some of those prescribed in the *Appendix* (F. 180, 181. 205. 216. 252. 433.), may be resorted to. In the putro-adyynamic form, and in the advanced states of typhoid fever, purgatives ought to be always combined with tonics and aromatics. They should never be given, excepting very manifestly required; and then in moderate doses, and combined as now advised, particularly when there is diarrhoea, or evacuations of blood, or meteorismus. However, rhubarb, or turpentine, in small or moderate doses, with aromatics, will often be of much service in such cases.

580. *d.* There are several *stimulants* of great use in low fevers; and which, owing to their peculiar or febrifuge operation, may be given with great benefit, in that state of excitement, which is attended by vital prostration, as well as in more advanced stages of the disease. Of these the most applicable and beneficial is *camphor*. This substance is most generally adopted; and has received the encomiums of most writers on typhoid fevers, and more particularly of RIVERIUS, STOLL, FERRO, HOME, MARCUS, THOMANN, GEBEL, REIL, SCHLEGEL, HORN, and HILDENBRAND. I have prescribed it not only in these, but also in pestilential, exanthematic, puerperal, and common continued fevers; and am satisfied as to its good effects, either when exhibited alone, or when combined with other appropriate medicines, and given in proper doses. In the *stage of excitement*, the dose, and the medicines which should be associated with it, should have reference to the state of vital power, to the mildness or severity of the disease, and to the nature of the prominent affection or complication. In this stage, particularly if vital power is not much lowered, it may be given in frequent doses of half a grain, or a grain, with a weak solution of the acetate of ammonia, or in a mixture with it and spirits of nitric ether, or with nitre (F. 494. 496.), or with muriate of ammonia (F. 431.), or with antimonials (F. 493.), or with any two or more of these. It may be also exhibited, in some circumstances with advantage, conjoined with calomel. If vital power is much depressed in this stage, the dose of the camphor may be increased, and the antimonial or the calomel omitted, or given merely at the outset. In some one or other of these combinations, it will prove of benefit, whatever complications the fever may present. As the disease passes into the *nervous stage*, and, more especially, as this stage passes into extreme exhaustion, the dose of camphor should be increased, and it may then be conjoined with tonics, various stimulants, antiseptics, &c., as arnica, cinchona, serpentaria, valerian, angelica, opium, sulphate of quinine, the chlorides, musk, aromatics, &c., according to the period and peculiarities of the disease. Many of the best writers in Germany prescribe it, early in the nervous stage, with arnica, or with acetic or citric acid. HAUTESIERK, CALLISEN, LUDWIG, BONNEVAULT, FRANK, JAEGERSCMIDT, and HUFELAND direct a solution of camphor in acetic acid to be taken internally, and used externally, early in most states of typhoid fever. With the pyroligneous acetic acid, the camphor may be conjoined with still greater benefit. The inflammatory state of any organ supervening in the course of typhoid fevers does not contra-indicate the use of camphor, if given appropriately to the degree of vascular action and of vital power.

581. *Arnica* has been very much employed in Germany in low fevers, and in the nervous stage of typhus, yet it has not received a satisfactory trial in England nor in France. STOLL, FISCHER, COLLIN, FERRO, MERCIER, FRANK, RICHTER, HECKER, HILDENBRAND, and other high authorities recommend it, generally as directed above (§ 569.). QUENTIN prescribes an infusion of it with valerian. The flowers and the root are most commonly employed, and usually in the form of a weak infusion (F. 222, 223.).

582. In the low nervous form of typhoid fever, as well as in the nervous stage of exanthematic typhus, or in that stage and state of the disease for which the German physicians prescribe *arnica*, *valerian* may be employed with advantage. MATTHEI, FRIZE, REIL, THOMANN, and others recommend it. I have given an infusion of it in several cases, and made it the vehicle of other medicines, particularly the chlorate of potash, camphor, the alkaline subcarbonates, serpentaria (F. 269, 270.), &c. It is indicated in such states of fever as require a gentle tonic and stimulant of the nervous influence, especially when the nervous symptoms are prominent, although the head be cool, and the pulse weak. In these circumstances it may be conjoined with camphor, tonics, &c.

583. *Serpentaria root* was praised by FRIZE, STOLL, REIL, MARCUS, and others, in the advanced stage of low fevers, and in the circumstances just mentioned. It is still used, when the skin is cool or the pulse is weak, and when warm stimulating tonics are required. It is most serviceable in the form of infusion, with aromatics and tonics (F. 262. 416. 826.). *Angelica root* was recommended by REIL; *imperatoria root*, by HOFFMANN; and the root of *calamus aromaticus* by HILDENBRAND. They are very rarely employed in this country, although they are of service, particularly in the form of infusion, as vehicles for other medicines, and on account of their warm, diaphoretic, and stimulant effects. They may be employed variously combined with each other, or with camphor, tonics, &c.; and are indicated in the same circumstances as require the use of *arnica*, viz. in the low nervous and putro-adynamic states. Their infusions are good vehicles for tonics, the chlorates, or alterative salts. I have sometimes prescribed them with chloric acid and chloric ether, or with the chlorides of soda and potash.

584. *e. Cinchona and ether tonics* have been praised by HUXHAM, LIND, LANGRISH, GRANT, WESTPHAL, SIMS, VALLISNERI, CASSON, FORDYCE, and most of the writers on fever during the last century, and by many contemporary authors; whilst others have attributed more or less mischief to their use. When the various forms of typhoid fevers, their complications, and the very different pathological states in the successive stages of their course, are considered, this contrariety of opinion is easily explained. When the nervous stage has appeared, and when the putro-adynamic state is pronounced, whether early in the disease, as in the putrid or septic variety, or in the advanced stages of the nervous and exanthematic, the preparations of *cinchona*, and the *sulphate of quinine*, are the best tonics that can be selected, both for the permanence of their action, and for their influence in arresting the disposition to colliquation that pervades the fluids and soft solids

of the frame. In the early states of the disease, and where the propriety of having recourse to tonics is a matter of doubt, the *infusion of bark*, with the solution of the acetate of ammonia, and spirits of nitric ether, or the *decoction of cinchona*, with nitre and muriate of ammonia (F. 437, 438.), will generally prove serviceable.

585. *f.* The propriety of having recourse to *acids* in the states of low fever just alluded to has recently been disputed; and if the effects produced by them on the blood be considered, as shown by the experiments of FRIEND, ELLER, GIANELLA, HALLER, &c., and as stated in the article BLOOD (§ 135, 136.), rational doubts of their salutary influence may be entertained: yet the experience of most writers is in favour of them, particularly in fevers of a low character. SPANGENEERG, HUXHAM, LANGRISH, WOOD, MURSIMNA, ROWLEY, BOYER, RADEMACHER, SCHLEGEL, HORN, FORDYCE, BANG, MILLAR, FRANK, HUFELAND, &c. recommend the *mineral acids*, especially the *muriatic*, in the circumstances mentioned above. From a careful observation of their effects in many cases, I believe that they will prove beneficial in some cases, and injurious in others, according to the period and state of fever, and the mode of prescribing them. If they are given before the blood has become materially altered, and the vital energy much exhausted, but after requisite vascular or alvine evacuations have been carried sufficiently far—whilst the skin is still warmer than natural, and whilst the pulse is broad, open, and compressible, the mineral acids, with tonic infusions, will generally be serviceable. In this state, the infusion or decoction of *cinchona* may be given with muriatic acid and chloric ether; or the sulphate of quinine, with infusion of roses and sulphuric acid, or also with sulphuric ether. When the prostration is considerable, this latter may be the more energetic medicine. In more doubtful cases, particularly when the heat of surface is great, the infusion of *cinchona* or of *valerian* may be given with the nitrate of potash, or with the *nitrate of soda*, a few drops of nitric acid, and the spirits of nitric ether; and when the skin is cooler, either of these infusions, or some one of the others already mentioned, may be prescribed with equal parts of the *nitro-muriatic acid* and the tincture of serpentaria.

586. In the treatment of typhoid fevers it should never be forgotten that the state of the circulating fluids depends chiefly, if not entirely, upon that of the organic nervous influence, and that agents which apparently deteriorate the blood may yet be of use by administering to this influence. The *carbonic acid* gas was supposed by JANSSEN, FORTIER, and PERCIVAL, to act as an energetic tonic, when taken into the digestive canal; and they, therefore, directed the use of those fluids which contain it most abundantly; and even advised it to be thrown up the rectum. A similar practice was lately recommended by Dr. CLANNY, with the view of supplying the blood with this substance. But M. CHOMEL has shown the inefficacy of the practice (§ 538.). The acids which have appeared to me most serviceable in the early period of the adynamic, nervous, or putro-adynamic forms, are the muriatic, and the pyroligneous acetic, particularly when given in the decoction of bark (F. 388.), or in either of the warm stimulant infusions mentioned above.

When the nervous or putro-adyamic states are far advanced; when the temperature is low, and the skin lurid or discoloured; I believe, that whatever benefit follows the use of mineral acids, depends chiefly upon the salutary efforts of nature, or the substances prescribed at the same time. In the state just mentioned, the more energetic tonics and stimulants, in conjunction with camphor, the chlorate of potash, opium, wine, &c., are much more deserving of confidence. Besides cinchona and sulphate of quinine, other tonics, as cascarilla, calumba, gentian, &c., may be used; but they are inferior to bark; and ought to be given chiefly in conjunction with substances appropriate to the peculiarities of the case. The *willow bark* has been recommended by OTTO, SCHLEGEL, WHITE, and HUFELAND, but it does not appear to be equal to cinchona.

587. *g.* The *chlorates*, &c. — The *chloride of potassium* (muriate of potash) was first employed, under the name of digestive salt, by SYLVIVS; and, owing to its febrifuge properties, it afterwards obtained the appellation of febrifuge salt of SYLVIVS. It was given in doses of from one to two or three drachms: and, although its action is stimulant, aperient, diuretic, and antiseptic, it has seldom been used in modern times. It is of service in the low stages of fever, and when there is evident change in the circulating and secreted fluids; but it is inferior to the *chlorate of potassa* in these states. This latter salt was recommended by GARNETT and some other writers, but at no time has it been generally used. I have prescribed the chlorate of potash in several diseases, since 1819, and consider it a valuable medicine, especially in the advanced stages of typhoid fevers. When excitement or vascular reaction is about to pass into the nervous stage, and when inflammatory determination has been removed, either of these salts, but the latter especially, will be prescribed with benefit. The chlorate may be advantageously conjoined with tonics, and camphor; or it may be given in doses of five or seven grains every two or three hours, in tonic infusions, or in larger quantities at longer intervals. — A solution of *chlorine*, or of *chloric ether*, or of both, may be used in the same states, for which the chlorate of potash or the chlorides are here recommended.

588. The *chloride of sodium*, or common salt, although sometimes used, in various forms, but commonly as an aperient and anthelmintic, by the older writers, has recently been seldom resorted to, excepting in enemata, in the treatment of low fevers. Formerly *putridity* was much insisted upon as a characteristic of certain states of fever; for, owing to the intensity and concurrence of the exciting causes, to the treatment, and to the influences in operation through the course of the disease, these changes of the fluids and soft solids, which, although not strictly putrid, yet somewhat resemble it, or even approach it, were common occurrences, in the course of the inflammatory, as well as of the adynamic varieties. These changes, inasmuch as they consist, in some measure, of an incipient dissolution of the vital cohesion of the tissues, and of the healthy condition of the fluids, quickly passing, with the disappearance of life, into manifest decomposition, were not altogether inappropriately termed putrid; and, for want of a more suitable

name, they may still retain the denomination. With the modern disuse of this term, and from a disbelief of the possibility of putridity taking place in a living body, the operation of medicines in preventing or counteracting it was denied. Thus an *antiseptic* property was denied to medicines, although it could not be doubted that many substances had the power both of averting and of remedying the changes usually termed putrid. This power was imputed to their influence upon the nervous system, particularly the cerebro-spinal part of it. I have, however, shown at other places, by experiments performed by myself and others, that numerous substances are quickly conveyed into the circulation, where they directly change the state of the circulating fluids and secretions, and affect the organic or ganglial nervous influence.

589. Conformably with this view, the older opinion as to the operation of antiseptics on the living, as well on the dead body, — that certain substances prevent or counteract the changes usually denominated putrid or septic, — seems well founded. There can be no doubt that the circulating fluids are contaminated or altered in the course of fever, owing to the *superabundance* of certain constituents, and the *loss* of others necessary to the continuance of health. The impeded functions of the lungs, the skin, liver, and kidneys, in the early stage of the disease, will occasion the former of these changes; and the stop put to the functions of digestion and assimilation — to the sources of supply — will produce the latter. That the muriate of soda is necessary to the healthy state of the blood, cannot be doubted; it therefore follows that the privation of it, for a number of days, during the treatment of fevers, will materially favour the morbid condition which the fluids assume in the advanced stages. But as other substances, as the muriate of potash, muriate of ammonia, nitrate of potash, and nitrate of soda, act on the blood and on the economy in a similar manner to the muriate of soda, although not so beneficially, universally, and permanently as this last, which has been so bountifully supplied by nature, we are enabled to account for the benefit derived from the use of them, in the advanced stages of fever, by writers in the sixteenth and seventeenth centuries. It seems very probable, that the common salt taken so abundantly with our food, after having produced the effects arising from its neutral state, is decomposed by the nervous or vital influence, or by the electricities circulating through the frame; and that each of its constituents performs ulterior offices in the economy, that are necessary to the continuance of health, and enters into new combinations, produced by the actions of the respective organs, in the circulating and secreted fluids.

590. If this view be just, the insufficient supply, or the privation, of this salt in the early stages, whilst the discharge of it continues by the excretions, in either its neutral or its decomposed states, will cause a deficiency of it in the blood in the advanced periods of fever, and will give rise to further changes both in the circulating and in the secreted fluids. In conformity with this opinion, a modification of the medical and regimenal treatment, usually recommended in typhoid fevers, should be adopted. It is not improbable, that the evils resulting from a total privation of a substance so necessary to the

healthy discharge of the functions, as the muriate of soda is, would have been more generally manifest in these diseases, if other substances, acting somewhat similarly upon the blood and on the system, had not been commonly employed in the treatment of them. I have been led, by the antiseptic properties of certain medicines, to have recourse, in the latter stages of low fevers, to the most energetic of them, particularly the nitrate of potash, the chlorate of potash, the muriate of ammonia, camphor, and the terebinthines, cinchona, &c. in various combinations, either with each other, or with different stimulants and tonics, with the view of exciting the nervous influence, of supporting the powers of life, and of counteracting the changes, frequently terminating in a dissolution of the vital crasis and cohesion of the fluids and soft solids. But in fevers, which are characterised by excessive action at the commencement of excitement, and by extreme exhaustion, loss of irritability, and depravation of the fluids, in the latter stages, a too early recourse to some of these medicines may increase the morbid action, and aggravate local determinations; while a too cautious reserve of them, either as to quantity or as to the period of fever, may allow the diseased changes to proceed without interruption to a fatal issue. It is, therefore, imperatively required of us, that we should determine, by attentive observation, both the exact period in which medicines of this description should be commenced with, and the particular substances that should be first employed. As respects the kinds of fever just alluded to, as well as those forms which are either nervous, or more uniformly putro-adyynamic, at earlier stages, we are at no loss for means, which are both refrigerant and antiseptic, and which may be employed from the commencement, either when excitement is most excessive, or when it is entirely absent, if due care be taken in the mode of prescribing them. By this early attention, particularly in putro-adyynamic and inflammatory putrid fevers, to those means which may best preserve the fluids from the changes they are apt to undergo, especially when these fevers are left to themselves, or injudiciously treated, the advanced stages are rendered much more mild and even manageable. The more refrigerant of the substances, formerly termed antiseptics, as nitrate of potash, nitrate of soda, muriate of ammonia, &c., when duly administered in the early course of fever, and combined with or followed by those which are more stimulant and tonic, as camphor, cinchona, chlorate of potash, arnica, &c., as exhaustion and signs of putro-adynamia appear, will generally prevent the more dangerous changes in the fluids from taking place. The *muriate of ammonia* is now seldom used internally, although HOFFMANN, JACOB, BARCHUSEN, LOESECKE, TISSOT, WERLHOF, MONRO, HIRSCHL, HILLARY, M'CAUSLAND, GMELIN, and others, have recommended it highly in putro-adyynamic fevers. I have frequently employed it; and Dr. CONWELL has found it of great service in the fevers of India. SCHMIDT prefers it in such cases as are attended by diarrhoea.

591. About the time when M. LABARRAQUE discovered the *chlorides of soda* and of *lime*, cases of fever of a putro-adyynamic or malignant form were frequently occurring in an institution to which I am consulting physician. I had made

trial of various methods of treatment, but found camphor, in large doses, variously combined, and aided by other means according to the peculiarities of the case, the most successful of any. Shortly afterwards, M. LABARRAQUE's process for preparing these chlorides was published at Paris; and as early as 1825 I procured them from Mr. MORSON, for the use of this, and another institution, to which I was physician. I employed them internally, in enemata, and externally, and as disinfectants; and the results were such as have induced me to have recourse to them ever since, in the various circumstances and diseases in which I have recommended them in this work. The *chloride of soda* is a valuable medicine in all the typhoid forms of fever, when judiciously prescribed. It may be given early in the putro-adydynamic variety, when excitement is imperfect or low, and the skin discoloured, or petechiæ are appearing, and continued throughout the disease. But when vascular reaction is considerable, or local determination prominent, particularly in the nervous and exanthematic varieties, this substance should be withheld, until these states are subdued, or about to lapse into the nervous stage. — At first it ought to be prescribed in small doses, so as not to offend the stomach — in from ten to fifteen drops of the solution, as prepared by LABARRAQUE, every three or four hours, in camphor julap or in an aromatic water. As the disease passes into a state of exhaustion or of manifest putro-adynamia, or when there are a lurid skin, low muttering delirium, stupor, meteorismus, black sordes on the tongue, teeth, &c., the supine posture, unconscious offensive evacuations, petechiæ, blotches, a disposition to gangrene in parts pressed upon, coma, &c., it should be given in larger doses, or more frequently, and in tonic infusions or decoctions, or with camphor, serpentaria, or other stimulants and tonics. I have seen it productive of great benefit in such cases; but it should be commenced before these symptoms appear, and be persisted in, as its good effects are seldom manifest in less than three or four days, or more; and it should not supplant the use of wine, opium, suitable nourishment, and other means which the stage of the disease and peculiarities of the case may suggest. It should also be frequently administered in enemata; and the surface of the body ought to be often sponged with a stronger solution of it in warm water, with the addition of camphor. M. CHOMEL has lately given the chloride of soda an extensive trial; and he states that it has proved more successful in low fevers than any other means, when perseveringly employed. Dr. GRAVES has also recently employed it, and has found it extremely serviceable. It acts, first, on the tissues with which it is brought in contact, as a gentle stimulant and antiseptic; and is most probably partially decomposed in the digestive organs, and reduced to the state of common salt. In this state it is carried into the circulation, where it supplies the waste of this substance that has taken place in the early stage of the disease.

592. The *chloride of lime*, in doses of one or two grains, may be also employed with great advantage. When exhibited in solution, it will be preferable to commence with half a grain every hour, or with a grain every two hours, gradually increasing the quantity as the stomach

may tolerate it. It is best adapted to the more extreme cases of putro-adyndamia, and especially to those attended by urgent diarrhoea and meteorismus. In these it may be conjoined with camphor and other stimulants. It was employed by Dr. REID, of Dublin, in low fevers and in dysentery, a few months after the period of my having first had recourse to the chloride of soda. It may be prescribed in the same circumstances and combinations as the latter; but is not so generally appropriate, nor does it admit of so early, or of so prolonged, an exhibition.*

593. *h.* *Alkalies and alkaline carbonates* have been employed in various states of typhoid fever, and frequently with service. The *carbonate* and other *preparations of ammonia* have been very generally resorted to when diffusible stimuli have been required. In the early stages of these fevers, the carbonate may be used, with advantage, to make a neutral saline mixture with the pyroligneous acid, and either the alkali or the acid may be given in excess, or the mixture may be taken whilst effervescing. The preparations of ammonia are most useful in the nervous and exanthematic varieties of typhoid fever; and in conjunction with camphor, or with tonic infusions, in the nervous stage. In the putro-adyndamic state, they have seldom appeared to me to have any good effect, unless combined with these, or other tonics.

594. The *carbonates of soda and potash* are seldom used unless to form neutral *citraies* or *tartrates*, and to obtain the fixed air given out during the combination. The advantages of this latter are, however, by no means considerable; but the salts themselves are of service, by supplying, in some respects, the place of that commonly employed. The *subcarbonate of soda* has been occasionally used, and is recommended by Dr. STEVENS as an ingredient in his saline powders. In the more adynamic states of typhoid fever, or in the intestinal complications, the subcarbonate of soda should be given in a tonic infusion or decoction, with camphor, and with opium, or extract of poppy, or compound tincture of camphor, to prevent it from relaxing the digestive mucous surface, and from increasing the diarrhoea. Unless it be thus combined, or conjoined with the chloric salts, which Dr. STEVENS directs, it may not only aggravate the affection of the bowels, but also favour relapses, or cause the disease to pass into the dysenteric complication. An *acetate of soda*, formed by pyroligneous acid, with an excess either of the acid, or of the alkali, according to

the state of disease, and taken whilst effervescing, or afterwards, appears to me, from the few cases in which I have had an opportunity of using it, to deserve a more extensive trial.

595. The salts employed by Dr. STEVENS, viz. the muriate of soda, the subcarbonate of soda, and the chlorate of potash, cannot be supposed to act, even upon the digestive organs, in the states in which they are prescribed, without undergoing some change from their mutual action, and from the fluids with which they mix. Indeed, the results may be assumed to be muriates of soda and of potash, and subcarbonate of soda, taking the proportions of the individual salts into consideration. When these salts are taken into the stomach during the middle and latter stages of typhoid fevers, the passage of at least a portion of them into the circulation may be expected, and the loss of the saline ingredients of the blood in the early stages, argued for above (§ 538.), will be supplied. Upon this principle, and for the reasons there stated, this method deserves a more extensive trial than it has hitherto obtained; and when the nature of the salts, and the modes of their operation, are considered, it does not seem to differ materially from that by means of the chloride of soda, first adopted by myself.—There are certain points upon which Dr. STEVENS very strongly insists, and which are partly contradicted and partly confirmed by former observers: these are—1st, The superabundance of acid in the excretions; 2d, The influence of all acids in rendering the blood dark and grumous; and, 3d, The mischief produced by them in the latter stages of fevers. Now, without disputing the accuracy of the first statement, although a confirmation of it is required, I will admit the truth of the second; for it agrees with my own experiments, and with those performed by writers early in the last century, to whom I have referred in the article BLOOD (§ 135.). That acids will be injurious in the latter stages of fever, seems a rational inference from these experiments, in connection with the dark and morbid state of the blood at that time; and yet numerous writers have recommended them, and adduced proofs of their good effects even in the most malignant states of remittent, continued, and exanthematic fevers. The muriatic or hydro-chloric, citric, and pyroligneous acids have been severally employed in these states, and found of service; but they have also frequently failed. That the blood is black and dissolved in scurvy cannot be doubted, yet the advantages derived from citric acid have been great, unless some remarkable delusions as to the causes and treatment of this disease have existed*; and

* Dr. REID mentions an important fact illustrating the cause of putro-adyndamic fevers, — a cause which exists to a greater extent than is supposed, especially in large cities, although in a much less degree than in the instance about to be adduced. At Valladolid, during the war in Spain, the palace of the "Holy Inquisition" was appointed for the barracks of a British regiment. Under the colonnade was a well, from which water could be drawn into the uppermost stories. This water had a sweetish decayed taste; but, for the want of better, the soldiers used it both for drinking and cooking. No other regiment in the garrison was so unhealthy; and the prevailing disease was putrid fever, of which there was not the slightest symptom in any of the other regiments. At last the reason was discovered: skeletons were found in the well, and several were observed with pieces of the flesh adhering to the bones. If the chlorides of soda or of lime had been then known, or if that which had been long previously recommended been employed, the mortality from this fever, and from putro-adyndamic dysentery, would not have been so great as it proved during the Peninsular campaigns.

* From several opportunities of observation, I am of opinion that scurvy has been often confounded with putro-adyndamic fever; that both diseases formerly proceeded from the same causes, and often occurred simultaneously in the same camp, army, fleet, or ship; that the causes were chiefly putrid water, mouldy and adulterated bread, diseased and unwholesome flesh, vegetable and animal exhalations, insufficient nourishment, and the depressing passions; and that the protracted use of salted provisions of a good quality was but little concerned in producing either of these diseases. During the seventeenth and eighteenth centuries, trading vessels were provisioned as cheaply and as sparingly as possible, and fleets and armies were provided by contractors who enriched themselves and those who passed their supplies at the expense of the lives of thousands. Bread which was actually nauseous; the flesh of animals dead of epizooties; provisions which had been either salted for years, or nearly half putrid; numbers sleeping in a small space

such actually appears in some measure to have been the case. The truth, however, seems to be, that whilst pathologists have lately been occupied exclusively with the living solids, Dr. STEVENS has concerned himself only with the blood, and kept too much out of view the influence of life, especially as manifested in the organic nervous system, upon both the circulating and secreted fluids.

596. As far as my own observations enable me to form an opinion as to the respective merits of these acids, and of the alkaline subcarbonates and salts, I conclude—1st, That the *acids* may be of service early in fever, whilst vascular excitement is considerable, although vital power may be weak; that they seldom will be injurious in this period, as long as the skin continues warmer than natural, and the blood preserves its colour; and that but little confidence should be placed in them when the surface is at, or below, the natural temperature, or materially discoloured, unless they be conjoined with substances calculated to excite the powers of life. 2d, That the *subcarbonates of soda and potash*, the solution of *chlorine*, and the *chlorides*, are preferable in the middle and latter stages, more especially when the blood appears morbid, the skin discoloured, and the excretions offensive; but that the subcarbonates should not be trusted to in the last stages of typhoid fevers, unless conjoined with substances calculated to support the vital energies; and that, at this period, *chlorine*, the *chlorates*, and *chlorides*, should be preferred, as being more tonic, stimulant, and antiseptic than the carbonates. 3d, That the *sulphate of soda*, the *phosphate of soda*, and the *sulphate of magnesia*, are severally of service in the stage of excitement, when they may be given, at first so as to act gently on the bowels, and afterwards in small doses, as refrigerants, or alteratives; and that the *muriate of potash*, the *citrates*, and *acetates* may likewise be employed with the latter intentions. And, 4th, That circumstances may occur, in which it will be advantageous to exhibit the neutral salts with either an acid or an alkali, as the *muriate of soda*; with a vegetable acid, as prescribed by MORGAN; or with soda, as advised by STEVENS; or to prescribe saline substances with an excess of either of their constituents, as the *murates* with an excess of acid or of alkali.

597. *i. Opium, &c.*—Much difference of opinion has existed as to the propriety of giving opium in typhoid fevers. But when we find SYDENHAM, POLIDORI, ROLFINCK, SCHLEGEL, VAN HOVEN,

and imperfectly renewed air; the constant evaporation from the too frequently washed decks; water kept in wooden casks until it became blackish, inky, stinking, and nauseously putrid; were causes often in protracted and simultaneous operation. I have never been in a ship in any other capacity than as a passenger; but some of my voyages have been long, and have afforded me occasions of witnessing, even at the commencement of the nineteenth century, the existence of some of these causes. For many years matters have been altered, especially in the navy. The mutiny at the Nore; the advance of knowledge; the stricter attention to the supply, preparation, and quality of the provisions; the preservation of water in iron tanks, and some other subordinate circumstances; have done more to banish putrid fevers and scurvy from our fleets, than the use of citric acid, or any other antiscorbutic or antiseptic; and I have no doubt that the prevention of these causes, and the general adoption of the *chlorides*, will be found the most certain means of preventing and of curing these diseases.

HOME, HORN, MARCUS, LATHAM, STOKES, GRAVES, &c. favourable to the practice, the grounds of dissent from it ought to be carefully examined. There are circumstances and states of fever which forbid its use, but there are others which as imperatively require it; and I believe that the objectors err grievously in not discriminating between them, and in not studying either the conditions which contra-indicate it, or the modes of exhibiting it in the cases that would be benefited by it. SYDENHAM considered that it prevented coma, or stupor, when given after vascular and alvine evacuations had been judiciously employed. ODHELIUS, GILCHRIST, HOME, and GRAVES combined it with antimonials; and the propriety of the practice cannot be doubted, in the circumstances in which they employed it. In the present day, the indications for the exhibition of opiates have been so ably stated by two accomplished physicians—Dr. LATHAM and Dr. W. STOKES—that whatever I may advance as to this subject must in great measure be an echo of their observations. When the disorder of the sensorium outruns the other symptoms; when by venæsection or topical bleeding, or by alvine evacuations and refrigerants, the general and local symptoms are relieved, but the delirium still continues; when to this state are added, tremors, subsultus tendinum, and unrestrained evacuations; when there has been at first high vascular excitement, and large evacuations have been required to guard the brain or other organs from mischief, and wild delirium has followed; if the patient has previously been in a delicate or nervous state; if he has been addicted to an excessive use of spirituous or vinous liquors, particularly the former; if the habits of the patient and his occupations have been such as to inordinately excite and exhaust the sensorium; or if the anxieties, the toils, or the debaucheries of life have previously injured the health, and more especially the state of nervous energy;—in these several circumstances, should opiates be resorted to, in the advanced progress of typhoid fevers, and of synchoid fever that has passed into the nervous or typhoid state. On most of these, Dr. LATHAM has insisted with great precision and force; and I entirely subscribe to the value of his remarks. Dr. STOKES remarks, that *three* circumstances call for the use of opium in fever: 1st, Where there is persistent watchfulness; 2d, Where an inflammatory condition of the brain has existed, and been subdued, but delirium or other nervous symptoms still remain; 3d, Where an excited state of the sensorium exists without heat of scalp, or remarkable throbbing of the arteries of the head; and to these I may add a fourth, Where there are much relaxation of the bowels, unrestrained evacuations, tremors, watchfulness, or delirium, or subsultus tendinum.

598. The *mode* of exhibiting opiates is sometimes of great importance. In many cases, one or two grains of solid opium may be given, either alone, or with camphor and nitrate of potash. The combination with camphor is to be preferred, when there is much adynamia, and no inflammatory determination to the brain. When the bowels are very remarkably disordered, ipecacuanha may be added to these. The *acetate of morphine* is often superior to pure opium, when given in doses of from a quarter to half a grain, with camphor,

or with aromatic spirits, or warm spices, as Cayenne, &c.: particularly in cases of extreme prostration. The *muriate of morphine* may be preferred, if the chlorates are also prescribed. Opiates are sometimes of service when exhibited in small mucilaginous enemata. HILDENBRAND, who is averse from the use of opium in the exanthematic typhus, unless under circumstances manifestly indicating it, very justly remarks that, when it is determined upon, it should be given in a full or large dose, once or twice repeated after a proper interval, rather than in small and often repeated doses.

599. Other *narcotics* may be prescribed in certain states of typhoid fever, but they are not so deserving of confidence as opiates. The extracts of *poppy* and *hyoscyamus* are occasionally useful, particularly when opium disagrees; but even in such cases, the acetate of morphine, prescribed as just directed, will be of service. BRERA praises *belladonna* in the states of fever indicating the propriety of having recourse to opium. This narcotic is sometimes useful in the delirium attendant on erysipelas of the scalp. Mr. BLACKETT (*Lond. Med. Repos.* vol. xix.) recommends it in similar circumstances. It seems deserving of trial in the states of nervous fever mentioned above, and in the nervous stage of exanthematic typhus.

600. *k. The use of wine and of some other stimulants* requires much discrimination. It has been supposed by some writers, that *wine* is contra-indicated where there are delirium; a dry, black, or red tongue; red or suffused eyes; or much heat of surface. This is partly true; but one, or even more, of these symptoms may be present, and yet wine will prove of great benefit. Indeed, wine may be exhibited in the same circumstances as require the use of opium. When the delirium is of the kind above stated (§ 597.), and is accompanied with the same phenomena, &c. — when the state of the tongue is the result of extreme adynamia, inflammatory determination having been subdued — when the suffusion or redness of the eyes is the result of want of sleep, and is attended by a cool scalp — and when the heat of skin exists chiefly on the trunk, and is attended by indications of putro-adynamia — then wine will be given with benefit, and it is even indicated. This subject has been very ably canvassed by some contemporary writers, particularly by Drs. WILSON, PHILIP, ALISON, GRAVES, STOKES, and TWEEDIE, whose experience gives weight to their opinions; and they very nearly concur with me in the propriety of exhibiting wine with due precaution even in these circumstances, as well as in others which are less doubtful. — GILCHRIST, HEISHAM, HALLS, WENZEL, HARLES, MATTHÆI, HUFELAND, HORN, and others, even notice the influence of wine in reducing the heat of skin in fevers tending to putro-adynamia, and my own experience confirms the observation.

601. The *indications* for the exhibition of wine in the typhoid states of fever may be reduced to the following: — (a) When the patient has been proceeding favourably, and the pulse suddenly becomes weak, very soft, or irregular; the skin cool or damp; the countenance collapsed; and the strength prostrated; — (b) When the patient complains of a feeling of exhaustion, and expresses his wish for wine or support; — (c) When vital depression occurs unexpectedly or suddenly, or

without any evident cause; — (d) When the depression is owing to injudicious depletions, or excessive evacuations, or to the depletions or other means required to subdue inflammatory determinations at an advanced stage, or to protracted or excessive diarrhoea, or to hæmorrhage from the bowels, or from any other part; — (e) When, with these symptoms, the abdomen becomes tympanitic, and the exhaustion increases; — (f) When the delirium is low, muttering, and constant, and attended by tremors, or subsultus tendinum; the surface, and particularly the scalp, being cool, the pulse soft, weak or small, and the posture supine; — (g) When petechiæ or vibices of a dark hue, and other signs of putro-adynamia, appear; the scalp being cool, and the action of the carotids not materially excited; — (h) If early convalescence be slow, unattended by local affections of an inflammatory tendency, and owing chiefly to debility; — (i) If, with one or more of the foregoing indications, or with a soft pulse, moist tongue, or cool skin, in the latter stages, it be ascertained that the patient has been addicted to spirituous liquors, or to wine in excess; — (k) and if the character of the epidemic be of a low kind, and if the early excitement be attended by weak vital resistance, and soon pass into exhaustion — then the propriety of having recourse to wine or other active stimulants, with requisite precautions, cannot be disputed.

602. The *kind* of wine, its *quality*, and its *quantity*, are deserving of particular attention. — Old sherry, Madeira, and white hermitage, of the best quality, should be preferred. The red and acid wines are most apt to disagree; yet port and red hermitage are useful in some cases, particularly when diluted, and conjoined with aromatic spices, in the form of negus. NAVIER recommends champagne; but it is suitable only to the stupor or coma attendant upon an extreme state of adynamia. — The *quantity* of wine given in the twenty-four hours should depend upon several circumstances; but it may vary from four or five ounces to sixteen or twenty. Dr. BATEMAN thinks that it should not exceed a pint: very much larger quantities have, however, been given with benefit; but these are only the exceptions from the general rule. Regard ought to be had to the age and previous habits of the patient, as well as to the state of the disease. Young persons are readily excited, and should take only the smaller quantities. Older patients, and those especially who have been habituated to much wine, or to spirituous liquors, often require the full amount just named. The use of it ought always to be commenced in small quantities, and increased as the indications may guide the practitioner. In all cases, it should either be diluted, or given in the patient's food; and the effects carefully watched. — Dr. TWEEDIE justly observes, that, if the patient relishes the wine, if he is tranquillised by it, and if there is a gradual and steady improvement in the symptoms, without any marked excitement after it has been taken, benefit will result from it. On the other hand, if the pulse or heat of the skin are much or quickly raised by it; if the face becomes flushed, and the patient restless or incoherent; wine is either improper, or the quantity has been too great. If, after having been stimulated, he soon lapses into the previous state of exhaustion, or

seems weaker from each successive dose, no advantage will be obtained from it. When wine has produced the desired effects, it should be gradually withdrawn.

603. Other *fermented liquors*, particularly when bottled, and even *brandy*, have been used, in the circumstances indicating the use of wine. I have employed bottled stout with benefit. It is an excellent vehicle for the subcarbonate of soda or of potash, or for small doses of the muriates, or for both conjointly, and is most appropriate to the advanced stage of putro-adyynamic fever. Spruce beer, ginger beer, and Seltzer water, may severally be employed, and in a similar manner. Brandy ought to be much diluted, and is best suited to those who have been habituated to spirituous liquors. In cases attended by a protracted or colliquative diarrhœa, and extreme prostration, the brandy should be burnt, and given in some thin sago or arrow root.

604. *Yeast* has been frequently recommended in typhoid fevers. Dr. STOKER considers, that it may be given in all the stages in which it can be retained by the stomach, even when the existence of inflammatory complications prevents the use of other stimulants; and that it is generally easily taken alone, or with any other medicine, or in any vehicle that may be deemed advisable. In the worst forms of typhus, when it is most needed, he states that it is rarely rejected, but, on the contrary, is much relished; and that it is moderately laxative, often superseding the use of purgatives. If it prove not sufficiently aperient, he gives a little tincture of jalap in it; and if the bowels are too much relaxed, a few drops of tincture of opium are added to each dose. It appears to Dr. STOKER to correct the morbid contents of the alimentary canal, and the consequent symptoms of putrescence; petechiæ and black tongue being more effectually removed by it, than by any other means. He has, therefore, substituted it for bark and wine, when they could not be employed on account of inflammatory symptoms, and has conjoined it with them when there was no such counter-indication. He prescribes the yeast in doses of two table-spoonfuls every third hour, with an equal quantity of camphor mixture. If administered in enemata, three times the above dose may be employed. Dr. STOKER, whose experience of this treatment has been long, and most extensive, observes that, instead of increasing the tendency to tympanitic distension, by promoting fermentation, as may be objected, it actually prevents the accession of this symptom; and that, in the most obstinate instances of typhoid tympany, he has found enemata of yeast and assafœtida the most efficacious remedies.

605. Other *stimulants* require little attention. *Musk* has been recommended by the FRANKS, GEBEL, GMELIN, MARCUS, HORN, STOKER, and others in cases of true adynamia—of extreme prostration, with much affection of the sensorium. It may be prescribed in the same circumstances as admit of the use of wine. THOMANN, however, found it quite inefficacious. It should be given in large doses to be of any service—from ten to fifteen grains, with camphor or ammonia, or other medicines which the peculiarities of the case will suggest. *Phosphorus* and *phosphoric acid* have likewise been employed. They do not appear to possess any

claims to particular notice; but may be injurious if too liberally or inappropriately administered. I have seen benefit derived from the infusion of *green tea*, when the stupor or coma has been great; and I believe that strong *coffee* has sometimes proved useful in similar states. It has been recommended by ZAMBELLI and GRINDEL. The warm *spices*, especially *capsicum*, are often of service, and may be given in considerable doses in the latter stages of typhoid fevers, but chiefly as adjuvants or corrigents of other remedies. The *spirits of turpentine* are frequently productive of benefit, when prescribed in small doses, with aromatics or spices; but a large dose may be attended by very serious consequences, when exhaustion is extreme. It is an excellent medicine in enemata, with castor oil, muriate of soda, or other purgatives, when the bowels require to be opened; and with assafœtida, or extract of rue, when there is much tympanitic distension. Substances of a similar kind, or the usual carminatives, have been directed in enemata by THOMANN and HUFELAND, in order to remove this symptom; but the injection just recommended is the most certain in its effects. The means noticed above (§ 158.) may also be resorted to. When there is hæmorrhage from the bowels, these are generally efficacious. If they fail, a solution of the superacetate of lead, in pyroligneous acid, with the addition of *kréosote*, may be thrown up, in any vehicle which the peculiarities of the case may require.

606. Many practitioners are averse from giving stimulants or tonics in typhoid fevers, from a fear of thereby aggravating or inducing inflammatory determinations. But even where the nervous inflammations noticed above (§ 508.) may be presumed to exist, and particularly in an advanced period of these complications, a judicious use of stimulants is actually necessary. It is a well known fact, and well expressed by Dr. W. STOKER, that, at a certain period of inflammatory affections, stimulants become antiphlogistics; and this is more especially the case in respect of these affections, when they occur in the course of fevers. The nervous energy is then depressed, irritability is most remarkably impaired, the fluids changed, and the whole constitution incapable of manifesting the phenomena, or of developing the lesions, constituting true or sthenic inflammation and its consequences. A spurious or asthenic state of action only, quickly passing into disorganisation, can possibly take place in these circumstances; and it can be remedied solely by stimulating and antiseptic means. These facts are frequently placed before our senses, and demonstrated by the treatment found most beneficial, as well by that most injurious, in malignant sore throat.

607. *l.* Various *external means* have been suggested for typhoid fevers. Some of the most serviceable of them have already been noticed. The *cold affusion* over the general surface is very rarely admissible in this class of fevers; but applied to the head only, it is often of manifest service, when the determination to the encephalon in the early stage of excitement is great, or when the delirium is high or maniacal, or attended by increased heat of the scalp, and excited action of the carotids. In these cases it lowers morbid action remarkably, and procures sleep. *Tepid bathing* and *sponging* are favourably noticed by BROCKLESBURY, WOLFF, JACKSON, HALLÉ,

BRANDIS, and others. *Tepid* or *warm sponging* with a solution of the chlorides, or of the nitromuriatic acids, or of camphor in pyroligneous acid, are deserving of general adoption. Tepid or warm *aromatic baths*, or sponging the surface with infusions or decoctions of aromatic plants, have been employed by MARCUS, HORN, HARLES, and DUPIN. KERESIG advises *warm aromatic embrocations* to be placed over the abdomen, when there is diarrhoea or meteorismus. — The use of *blisters* has been sufficiently noticed. They may be applied over, or near, the affected organ, when the affection consists chiefly of congestion, or impaired action. In other circumstances, they may be used as derivatives. This remark is applicable to the use of *sinapisms*, and to the warm turpentine embrocation. CALLISEN recommended *boiling water* to be used as a blister and derivative; and the idea has been adopted by some recent writers. One of the most beneficial external means that can be employed, is a liniment, consisting of the compound camphor liniment, with soap and Cayenne. This may be rubbed gently but assiduously over the hypochondria, or insides of the thighs, twice or thrice daily. I have occasionally resorted to this treatment, for upwards of twenty years, and often with great benefit. Several of the *liniments* prescribed in the *Appendix* may be used; but the Cayenne should be added, particularly when sensibility and consciousness are impaired. — *Dry cupping* may also be tried as a derivative, during the early or middle stages of the disease. In the putro-adynergic state it is seldom admissible.

608. iv. As to the *Prophylactic Measures* that may be resorted to in typhoid fevers, it is unnecessary to add any thing to what is stated above (§ 117. *et seq.*), and in the article INFECTION. The mean there recommended are quite applicable to the sediseases.

609. v. The *Diet and Regimen* in typhoid fevers are particularly deserving of attention. Both ought to be suited to the stage and form of the disease. — *a.* In the early period of excitement, the air should be pure, dry, cool, and without any current. The apartment should be large and open, the bed without curtains, and the air renewed, without exposing the patient to any chill. Barley water, fresh whey, rice gruel, or common gruel, with a little salt, when the excitement is low, or when thirst is not much complained of, may be employed as the usual beverage. The temperature of the drink, and of other ingesta, should be tepid or somewhat above it. If bronchial or catarrhal symptoms are present, warm, mucilaginous, and mild diaphoretic drinks should be allowed. It is improper in this stage to attempt to excite perspiration by warm coverings. If stupor is present in this stage, the external senses may be stimulated, and neither light nor noise need be excluded.

610. *b.* In the *nervous stage*, the air of the apartment should not be too cool; and the bed-clothes ought to be warmer. A uniform temperature, and the purification of the atmosphere, must be always attended to. A cold, moist air, and currents of air, during this stage, induce diarrhoea, bronchial or pulmonary congestions, or other dangerous complications; whilst a too warm, close, and impure air, particularly when breathed by a number of persons, favours the

development of putro-adynergic changes. The greatest cleanliness is requisite. Neglect of this produces gangrenous sores and ulcers, particularly where pressure is made, or slight bruises have been inflicted. The tongue should be scraped, and the teeth and mouth washed with salt and water, or gargled with them or with the chlorides, if the patient can do so. The hair may be cut off in the early stage; but the removal of it in this may be injurious, if the adynamia is extreme, and the scalp cool at the time.

611. In the nervous stage, bland, very digestible, and fluid nourishment may be allowed. The drinks should be mucilaginous, and gently warm. Whatever food or drink is used, whether gruel, thin arrow-root, &c., or weak animal soups, broths, beef tea, &c., should contain the usual quantity of salt, for the reasons stated above (§ 589.). If the treatment by the chlorides, &c. is adopted, this becomes a matter of less importance. Fruit tends to produce diarrhoea, and is seldom admissible. Wine, as advised above, is generally required, particularly when this stage passes into extreme prostration; and may be given in the nourishment adopted, or in soda water, Seltzer water, &c., diluted with warm water, or with tepid fresh whey. If brandy be used, it may be given in the same vehicles, or in weak black tea, in a state of much dilution. In the true typhus, stimulating the external senses is more necessary in this stage than previously; and it is often beneficial, as HILDENBRAND and NAUMANN advise, to rouse the patient's moral sentiments and affections, and to disperse his fugitive and chaotic ideas, by recalling former associations and objects of affection or of ambition. In extreme cases, however, the physical powers should be excited at the same time as the moral; otherwise the latter will be appealed to in vain. In a case of putro-adynergic fever, in which I took great interest, these united means proved successful in rallying the energies of life, under peculiarly unfavourable circumstances. During an expected crisis, a greater warmth of the bed-clothes is proper, and warm whey or other appropriate fluids should be given to encourage salutary evacuations (§ 167.).

612. *c.* During the *abatement* of the disease, the importance of diet and regimen increases, as treatment by medicine is now gradually abandoned. Nourishing food of easy digestion, taken in small quantities; pure air, and wine in some cases, are generally required; but these should be strictly prescribed as to kind, quantity, and frequency, according to the peculiarities of the case. As *convalescence* becomes established, the animal broths and soups may be succeeded by a little solid animal food, of the lightest kind. The dangers to be apprehended during recovery have been fully stated above (§ 168.), their causes assigned, and the means of preventing them pointed out (§ 169.). Little further is, therefore, now required. But it will be most useful to recollect, that the management of convalescence should have some reference to the particular form and complication of the disease. In the exanthematic typhus, the danger of consecutive disorder is the least, particularly if it have run its course regularly and terminated by crisis. After low, nervous, and putro-adynergic fevers, affections of the brain, liver, bowels, lungs, and me-

senteric glands, are not unusual, particularly when the patient has been prematurely exposed to changes of weather, to irregularities of diet, &c., and when the treatment has been injudicious, during early convalescence, or too soon relinquished. In all the varieties, the risk of these affections is increased by the complications which the fever presented; the organ which was prominently deranged remaining longer weak, or more susceptible, than others, of being disordered by excitation, or by injurious agents. Therefore, in cases where the predominant disorder has been expressed on the encephalon, particular care should be taken to preserve the sensorial functions from early excitement or irritation, or undue exercise. Where the respiratory organs have been much affected, premature exposure to cold, or to changes of temperature, &c. ought to be guarded against; and where the digestive organs have manifested the onus of morbid action, the return to a full or stimulating diet should be long delayed, and the most digestible food only ought to be taken, and in moderate quantity. (See further on this subject, § 167—170.; and art. DEBILITY, § 36—46.)

BIBLIOG. AND REFER. — *Hippocrates*, De Morbis, l. i. cap. 27.; Epid. l. vii. cap. 23. — *Galen*, De Differ. Febr. l. i. c. 5. — *Aëtius*, Opp. Tetrab. serm. i. cap. 129. — *Orbasius*, Synops. l. vi. c. 7, 8. — *Avicenna*, Canon. l. iv. fen. l. tr. i. c. i. — *Rhazes*, Opera, l. vii. cap. iv. Venet. 1542. — *N. Massa*, De Febre Pestilenti, Petechialis, &c. Venet. 1556, in *Halleri* Bib. M. Pr. vol. i. — *W. Bulleyn*, Dialogue of the Regiment against the Fever, &c. Lond. 8vo. 1564. — *A. de Torres*, De Febribus Epidem. et Novæ quæ Latine Punctularis, vulgo Tavadillo et Puntos dicitur, Natura, Cognitione, et Medela. Burgos, 1574. Vide *Halleri* Bibl. M. Pr. vol. ii. p. 150. — *J. Fernelius*, De Pathologia l. iv. cap. 18. — *Theræus*, De Feb. Purpurea, Epid. et Contag. 8vo. Paris, 1578. — *Fracastorius*, De Morbis Contagiosis, l. ii. et iii. *passim*. — *J. Coytlerus*, De Febre Epid. et Contagiosa, l. ii. 4to. Paris, 1578. — *Salius Diversus*, De Febri Pestil. et Petech. 4to. Bonon. 1584. — *Roboretus*, De Peticulari Febre, An. 1591. Vag. Trid. 1592. — *Wittich*, De Febre Epid. Malign. Petech. 8vo. Leipz. 1592. — *L. Mercatus*, De Essentia, Causis, Signis, et Curat. Febr. Malig. Bas. 1594. — *P. A. Caprili*, l. iii. De Febribus Putridis in Genere et Specie. Ferrar. 4to. 1591. — *V. Balduti*, Nova Febr. Malign. Curand. Ratio. 12mo. Venet. 1612. — *B. Brunner*, Consilia Medica, No. 42, 43. 4to. Halæ, 1617. — *J. Burserius*, De Febre Epid. Petechialis, &c. 8vo. Leipz. 1621. — *J. C. Rhumelius*, Hist. Morbi qui ex Castris, &c. penetravit in Bavar. Ann. 1621, 4to. Norib. 1624. — *J. J. Federer*, Brevis Febr. Hungaricæ Curandæ Methodus, 8vo. Frib. 1624. — *Strobelberger*, Epist. super Variis Quest. Febr. Malign. Petech. concernent. &c. Lip. 1616. — *E. Graevius*, Morbus Epid. Anni 1643, 4to. Oxford, 1643. — *J. Recalchus*, De Febre Typhode. Ferar. 1638. — *A. Castro*, Febr. Malig. Punctularis Aphorism. delineata. Verona, 1650. — *Riverius*, Oper. l. xvii. — *Lange*, De Morbo Castrensi Hungarico. Lips. 1649. — *P. Neucrantz*, Liber de Purpura, in quo Febr. Malig. Nat. et Curatio proponitur. Lub. 1648. — *Sennertus*, De Febribus, l. iv. c. 7. &c. — *Zacutus Lusitanus*, Med. Pract. Hist. l. iv. n. 51. — *Anon.*, De Usu Vini Emetici in Curat. Februm Malig. ad Mentam Hippocratis. Paris, 1662, 12mo. — *Paulus*, De Feb. p. 18—64. — *G. C. Petri*, De Febri Militari seu Morbo Hungarico. Erf. 1665. — *J. A. Friderici*, De Morbo Castrensi seu Hungarico, 8vo. Jenæ, 1666. — *P. Amman*, De Febre Hungarica, 4to. Helmst. 1668. — *Primerosius*, Tract. de Febribus, l. iv. c. 1, 2. — *Willis*, De Febribus, cap. 12. 14. — *W. Simpson*, History and Cure of Fevers, &c. 12mo. Lond. 1678. — *V. Willis*, De Morbis Castrens. Internis. Hafn. 1679. — *De Carmona*, De Daniæ Epidemiis. Helmst. 1679. — *Tiling*, De Feb. Petechiale. Lugd. Bat. 1686. — *C. L. Morley*, De Morbo Epid. Observat. Lond. 1686. — *G. Harvey*, On the Small Pox and Malignant Fevers. Lond. 1685. — *L. Donkers*, Idea Febris Petechialis, seu de Morbo Punctulari. Lugd. Bat. 1686. — *Crause*, De Febre Petechiale. Jenæ, 1683. — *A. Brown*, A New Cure for Fevers, &c. 12mo. ed. 1691. — *J. Forrest*, A Brief Defence of the Old Method of curing Continued Fevers, 8vo. ed. 1694. — *Ramazzini*, De Constitutione Ann. 1691—92 et 94, in Mutinensi, &c. Opera. — *C. Oliphant*, A Short Discourse on Vomiting in Fevers, 8vo. Lond. 1699. — *W. Oliver*, Pract. Essay on Fevers, &c. 12mo. Lond. 1704. — *F. Hoffmann*, Hist. Febris Malignæ Epid. Petechizantis, Halæ grassantis. Halæ,

1699. Vide Op. Supp. ii. c. 2. — *Stahl*, De Methodo Malign. Feb. secundum Rat. ex Exper. recte Tractandi. Halæ, 1708; et De Erroribus circa Contag. Feb. Curationem Vitandis. Hal. 1713. — *Morgagni*, De Sed. et Caus. Morb. Epist. lxxviii. art. 3. — *Vaulsneri*, Opera, iii. p. 270. — *G. Cheyne*, A New Theory of Acute and Slow Continued Fevers, 8vo. Lond. 1722. — *Ettmüller*, Tract. von Flekfebern. Leipz. 1726. — *E. Strother*, Pract. Observ. on the Epid. Fever, &c. 8vo. Lond. 1729. — *Rogers*, An Essay on Epidemic Diseases, more particularly the Epidemic Epidemics of the City of Cork, &c. 8vo. Dubl. 1734. — *D. Turner*, Discourse concerning Fever, 8vo. Lond. 1732. — *T. Lobb*, Medical Practice in curing Fever, 8vo. Lond. 1735. — *J. Huxham*, An Essay on Fevers, 8vo. Lond. 1739. — *D. Cor*, Observ. on the Epid. Fever of the Year 1741, 8vo. Lond. 1742. — *Barker*, Observ. on the present Epid. Fever. Lond. 1748. — *Chirac*, Traité des Fièvres Malignes, &c. 12mo. Paris, 1742. — *J. Pringle*, Observ. on the Nature and Cure of Jail Fevers, 8vo. Lond. 1750. — *J. G. Hasenoehtl*, Hist. Morb. Epid. sive Febris Petechialis, quæ 1757—59 Viennæ grassata est. Vindob. 1760. — *Huxham*, Opera, t. ii. cap. v. p. 94. — *J. Ball*, A Treatise on Fevers, 8vo. Lond. 1758. — *J. Johnston*, Hist. Dissert. concerning the Malign. Epid. Fever of 1756, 8vo. Lond. 1758. — *Bianchini*, Let. Medico-prattiche intorno all' indole delle Feb. Maligne. Venez. 1750. — *J. Lind*, Two Papers on Fevers and Infection. Edin. 8vo. 1763. — *J. Hawkridge*, On Fevers, their Nat. and Treat. 8vo. Lond. 1764. — *D. Lysons*, Essay on Camphire and Calomel in Fevers, 8vo. Lond. 1771. — *J. C. Lettsom*, Reflexions on the Treatm. and Cure of Fevers. Lond. 8vo. 1772. — *N. Langswert*, Hist. Med. Morb. Epid. sive Febr. Putr. Bohemica, Ann. 1771—2, &c. 8vo. Prag. 1773. — *Glass*, Comment. 12. de Febribus. Jenæ, 1771. — *Delius*, De Møder. Usu Nitri in Febr. Putridis, &c. Erl. 1772. — *Haenel*, in Epist. ad Hallerum script. vol. ii. — *W. Fordyce*, A New Inquiry into the Causes, Symptoms, and Cure of Putrid and Inflamm. Fevers. Lond. 1773. — *Sauvages*, Nosol. Meth. Cl. ii. Gen. 4. — *Sagar*, Hist. Morbi Epidemici in Circulo Isglaviensi Observati. Lips. 1773. — *Westphal*, De Magni Corticis Peruv. ad Curand. Febr. Malignas Usu. Gryp. 1775. — *Fournier*, Observ. sur les Fièvres Putrides et Malignes, &c. Dijon, 1775. — *Boyer*, in Gazette de Santé, 1777, p. 143. — *Bissel*, Med. Essays, p. 66. et seq. — *R. White*, Observat. on Fever, 8vo. Lond. 1777. — *M. Stoll*, Rat. Med. vol. ii. p. 206., et vol. iii. p. 89. — *Sims*, Observat. &c. p. 187. — *W. Grant*, Obs. on the Pestilential Fever, &c. 8vo. Lond. 1779. — *Home*, Med. Facts and Observ. p. 30. — *Gilchrist*, in Ed. Med. Comment. vol. xi. p. 205.; and Ed. Med. Essays, &c. vol. iv. p. 280., and vol. vi. p. 28. — *J. Miller*, On the Prevail. Dis. of Great Britain. Lond. 1780. — *J. Roberts*, Observ. on Fevers, 8vo. London, 1781. — *N. Giannelli*, Mem. della Feb. Maligna del Real Convitto de Donzelli di Nap. dell' Anno 1780, 8vo. Nap. 1781. — *F. Milman*, Inquiry into the Source from which Scurvy and Putrid Fevers arise, &c. 8vo. Lond. 1782. — *Heysham*, On Jail Fever, 8vo. Lond. 1782.; et in Ed. Med. Comment. vol. viii. p. 193. — *De Haen*, Rat. Med. P. iii. p. 45., viii. c. 3., x. c. 5. — *Berlinghieri*, Sulla Febre dette Putrida. Lucca, 1781. — *Mertens*, Beobacht. der Faulen Fieb. &c. p. 60. — *R. Robertson*, Observ. on the Jail, Hospital, or Ship Fever. Lond. 1783. — *Bang*, in Acta Regii Soc. Med. Havn. vol. i.—iii. *passim*. — *Banau*, Observat. sur diffé. Moyens propres à combattre les Fièvres Putrides et Malignes. Amst. 1784. — *C. Dickson*, Inquiry into the Nature and Cause of Fever. Edin. 1784. — *P. Kennedy*, Account of a Contag. Fever at Aylesbury, 1785. — *Tuomy*, On the Principal Diseases of Dublin, p. 125. et *passim*. — *J. Hunter*, in Med. Transact. vol. iii. p. 345. — *D. Campbell*, Med. Observat. on the Typhus, &c. 8vo. Lancaster, 1785. — *C. Strack*, Observ. Med. de Morbo cum Petechiis, &c. 8vo. Carolsr. 1786. — *M. Wall*, Clin. Observat. on the Use of Opium in Low Fevers, 8vo. Oxf. 1786. — *Chambon de Montaux*, Traité de la Fièvre Maligne Simple, &c. Paris, 1787. — *Forestier*, in Journ. de Méd. 1788. — *Sandiford*, in Med. Observat. and Inquiries, vol. iv. art. 24. — *J. Riddel*, On Continued Fever, 8vo. Glasg. 1788. — *R. Jones*, An Inquiry into the Nature and Cure of Nervous Fever, 8vo. Lond. 1789. — *Saalmann*, Descriptio Februm Malign. &c. Munster, 1791. — *Callisen*, in N. Acta Reg. Soc. Med. Haun. vol. iv. p. 406. — *Van Hoven*, Geschichte eines Epid. Fiebers, &c. p. 43. — *W. Renwick*, Inquiry into the Nature and Causes of Sickness in Ships of War. Lond. 1792. — *S. Cera*, De Febre Nosocomiali. Mailand, 1792. — *J. Halliday*, A short Account of the Putrid Fever, &c. 8vo. Lond. 1795. — *Cullen*, Works, by Thomson, vol. i. p. 540. et *passim*. — *Darwin*, Zoonomia, vol. ii. p. 455. — *Burserius*, Institut. Med. Pract. vol. ii. cap. 10. &c. — *Ferriar*, Med. Hist. and Reflexions, vol. ii. p. 177. — *S. G. Vogel*, Handb. der Prak. Arzneiwissensch. b. ii. p. 83. — *W. Berends*, Vorles über Prakt. Arzneiwissensch. b. ii. s. 193. et seq. — *B. Rush*, Inquiries, &c. vol. i. p. 212. — *Portal*, Mém. sur plusieurs Mal. t. v. p. 1. et seq. — *J. P. Frank*, De Curand. Hom. Morbis, 8vo. vol. i. Class. i. Ord. i. *passim*. — *A. G. Richter*, Spezielle The-

rapie, b. i. *passim*. — *Stark*, Handb. zur Erkenntn. u. Heil. innerer Krankh. d. Mensch. K. Jenæ, 1799. — *Pinel*, Médecine Clinique. Paris, 1804, *passim*. — *Reil*, Ueber d. Erkenntn. u. Cur. der Fieber, b. i. s. 525. *et seq.* — *G. Buchanan*, Treatise on Typhus Fever. Balt. U. S. 1789. — *Aitken*, in Mem. of Med. Soc. of Lond. vol. iii. art. 21. — *S. Herz*, Beobacht. üb. d. Nervenfieber, &c. Heidel. 1790. — *Ch. Reil*, Patholog. Typhi Acuti. Hallé, 1792. — *J. Wood*, On the Effects of the Applicat. and Abstract. of Stimuli on the Human Body, 8vo. Lond. 1793. — *J. C. Grimaud*, Cours Complet des Fièvres, 3 tomes, 8vo. Monsp. 1795. — *J. C. Smyth*, A Description of the Jail Distemper at Winchester in 1786, 8vo. Lond. 1795. — *Mercier*, in Journ. Gén. de Méd. t. xxxiii. p. 386. — *H. Rennebaum*, Hist. Morb. Epid. Contag. Ann. 1793 et 94. a Francogallis Capt. delati, &c. Erl. 1796. — *Reil*, Mem. Clin. fasc. i. p. 17–27. — *Casson*, in Mém. de la Soc. Méd. d'Emulat. t. v. p. 97. — *Garnett*, Annals of Med. by *Duncan*, vol. ii. p. 409., et vol. iii. p. 445. — *E. Polidori*, Mém. sopra un Tifo Contag. Pisa, 1798. — *C. W. Hufeland*, Bemerk. üb. d. Nervenfieber u. seine Complic. in d. J. 1796–8. Jena, 1799. — *F. A. Eisfeldt*, Meletemata quædam ad Hist. et Nat. Typhi Acuti. Lips. 1779. — *G. Lipscomb*, on the Nature and Treatm. of a Putrid Malign. Fever which prevailed in Warwick, 1798. Lond. 1799. — *Thomann*, Annalen ad 1800, *passim*; Annales Wirceburg. vol. i. p. 94. *et passim*, vol. ii. p. 191. *et seq.* — *W. G. Ploucquet*, Expos. Nosolog. Typhi. Tübing. 1800. — *G. B. Guani*, Riflessioni sull' Epid. della Liguria, &c. Genov. 1801. — *A. Gobetti*, Ricontra Medico del Tifo Contagioso osservato nel Distretto di Rovigo, &c. — *Padua*, 1802. — *Horn*, Archiv für Med. Erfahrung. &c. b. i. n. 3., b. iv. p. 739. — *Matthæi*, in *Hufeland*, Journ. d. Pract. Arzneik. b. viii. s. 4. p. 106. — *Harles*, in Ibid. vol. v. p. 124. — *Wolff*, in Ibid. vol. ii. p. 638. — *Wenzel*, in *Hufeland*, Journ. d. Pract. Heilk. b. viii. s. 4. p. 176. — *Schlegel*, in Ibid. b. ix. s. i. p. 102. — *Quentin*, in Ibid. b. ix. s. 3. p. 190. — *Gebel*, in Ibid. b. ii. p. 199. — *Kerksig*, in Ibid. b. xxiv. p. 124. — *Hufeland*, in Journ. d. Pr. Arzneik. b. vii. p. 109., et p. 167. — *Rasori*, Riflessioni sulla Epid. della Liguria. Genoa, 1801. — *J. G. Rademacher*, Beschreib. ein. Neuen Hilart d. Nervenf. Berl. 1803. — *Hallé*, in Journ. de Méd. t. lxii. p. 133. — *G. Rossi*, Della Febbre Petecchiale negli Anni 1802–3, 8vo. Fabr. 1804. — *C. F. Harless*, Neue Untersuch. über d. Fieber überhaupt und über Typhus-Fieber insbesondere. Leips. 1804. — *Horn*, Archiv. für d. Med. &c. b. ii. h. i., et b. iii. p. 343.; and Beyträge, p. 476. — *Marcus*, Magaz. für Therapie, b. i. p. 257. — *W. Rowley*, Treatise on Putrid and Infect. Fevers. Lond. 1805. — *Mayer*, Specimen de Remed. Efficaciss. in Morbis Contag. Wien. 1806. — *A. F. Hecker*, Ueber die Nervenf. welche in Berlin im J. 1807 Herrschten. Berl. 1807. — *D. Bernard*, De Methodo varias Feb. Formas Disting. et de Typho in Specie. Erf. 1808. — *N. P. Gilbert*, Tableau Hist. des Mal. de Mauvais Char. de la Grande Armée dans la Camp. de Prusse, &c. Berl. 1808. — *A. F. Hecker*, Ueber d. Natur u. Heilart d. Faulf. 8vo. Berl. 1809. — *Kletten*, De Febre Nervosa et de Morb. Constitutione Nervoso-putrida, in Nosocomio Militari, Ann. 1807–8. Vibeb. 1809. — *L. Beaulac*, Hist. de la Constitution Epid. observée chez les Soldats Franc. dans le Vienne, 8vo. Paris, 1810. — *Jourdain*, in Journ. de Méd. Continuée, t. xviii. p. 85. — *Masuyer*, Observat. sur la Fièvre des Hôpitaux, &c. 8vo. Paris, 1811. — *Nysten*, *Guerseut*, et *Savary*, in Bullet. de la Faculté de Méd. de Paris, 1812, p. 137. — *G. L. Wedemajer*, Comment. de Febri Petecchiali. Göt. 1812. — *Zambelli*, De Vi Febri-fugæ Fabæ Arab. seu Coffæ, &c. 8vo. Vien. 1811. — *E. Acerbi*, Dottrina Teorico-pratica del Morbo Petecchiale, 8vo. Milano, 1811. — *H. A. Goeden*, Ueber d. Natur u. Behandlung des Typhus. Berl. 1811. — *P. Kolbany*, Bemerk. ü. d. Ansteckenden Typhus, der im J. 1809, 1810, in Presburg herrschte. Presb. 1811. — *G. Rasori*, Storia della Febbre Petecchiale di Genova, 8vo. Milano, 1812. — *P. K. Hartmann*, Theorie d. Ansteckend. Typhus u. seiner Behandlung. Wien. 1812. — *Frank*, Acta Institut. Clin. Vilm. Ann. ii. p. 28.; et Interp. Clin. vol. i. p. 222. — *C. Roux*, Traité des Fièvres Adynamiques. Paris, 1813. — *Marcus* au *Röschlaub*, Ueber den Typhus. Bamb. 1814. — *E. Horn*, Erfahr. ueber die Heil. d. Ansteck. Nervenfieb. &c. 8vo. Berl. 1814. — *J. Bischoff*, Beobacht. ueb. d. Typhus u. d. Nervenfieber, &c. Prag. 1814. — *J. F. Ackermann*, V. D. Natur. d. Ansteck. Typhus, u. d. Methode die Krankh. Heidl. 1814. — *C. W. Hufeland*, Ueber die Kriegspäst alter u. neuer Zeit. Berl. 1814. — *G. Wedemeyer*, Ueber d. Erkenntn. u. Behandl. d. Typhus in sein Regul. u. Anomal. Verlaufe. Halbers. 1814. — *K. F. Becker*, Ueber d. Erkenntn. u. Heil. d. Petecchialfieber. Göt. 1814. — *G. Jörg*, D. Nervenfieber im J. 1813. &c. Leips. 1814. — *G. A. Richter*, Med. Gesch. d. Belagerung u. Einnahme d. Fest. Torgau u. Beschreib. d. Epidemie, welche daselbst in d. J. 1813, &c. Berl. 1814. — *Steinheim*, Ueber d. Ansteck. Typhus im J. 1814, in Altona. Altona, 1825. — *J. V. von Hildenbrand*, Ueber den Ansteckenden Typhus, &c. Wien. 1825. — *R. Calvert*, Reflexions on Fever, 8vo. Lond. 1815. — *W. Stoker*, A Treatise on Fever, 8vo. Lond. 1815. — *H. A. Goeden*,

Geschichte des Ansteck. Typhus in Vier Buchern. Bresl. 1816. — *Bompard*, Descript. de la Fièvre Adynamique, 8vo. Paris, 1815. — *J. H. Hernandez*, Essai sur le Typhus, &c. 8vo. Paris, 1816. — *D. J. Dickson*, in Lond. Med. and Phys. Journ. vol. xxii. p. 99., vol. xxviii. p. 446., vol. xxxv. p. 499., et vol. xxxvi. p. 130. — *W. Kidd*, in Edin. Med. and Surg. Journ. vol. xiv. p. 144. — *A. Duncan*, in Ibid. vol. vii. p. 431., et vol. xiv. p. 529. — *G. Tommasini*, Delle Febbri Contag. e delle Epid. Costituzione. Bologn. 1817. — *J. Armstrong*, Practical Illustrations of Typhus and other Febrile Dis. Lond. 1817. — *Douché*, Hist. d'une Fièvre Nerveuse, Putride, &c. 8vo. Strasb. 1819. — *V. Ab. Hildenbrand*, Institut. Pract. Medic. t. iv. — *E. Percival*, Practical Observat. on the Treatm. Pathol. and Prevent. of Typhus Fever. Lond. 1819. — *F. Barker* and *T. Cheyne*, An Account of the Rise, Progress, and Decline of the Fever lately Epidemical in Ireland. Lond. 1821. 2 vols. — *J. Frank*, Prax. Med. Universæ Præcepta, &c. part i. vol. ii. (2d ed.) *passim*. — *Chomel*, Nouveau Journ. de Méd. t. iii. p. 284. (*Læsio nulla post mortem*.) — *Dechenaux*, in Ibid. t. iii. p. 329. (*Læsiones primarum viarum*.) — *Van der Keer*, in Journ. Univers. des Sc. Méd. t. xxxi. p. 129. 257., t. xxxii. p. 5. (*Læsiones in feb. adyn.*) — *Barbier*, Reflexions sur les Fièvres, 8vo. Paris, 1821. — *Raïkem* et *Bianchi*, Nouveau Journ. de Méd. t. iii. p. 344. — *Recamier*, in Rév. Méd. t. i. p. 192. — *J. Armstrong*, in Med. Intelligencer, May, 1822. — *F. J. V. Broussais*, Examen des Doctrines Médicales, &c. (3d ed. 3 tomes, 1825.) Paris, 1826. — *G. Cerri*, Osservazioni intorno al Morbo Petecchiale. Milano, 8vo. 1817. — *L. Porta*, Mem. sulla Pecchia. Lodi, 1817. — *T. Bateman*, A succinct Account of the Contagious Fever, &c. 8vo. Lond. 1818. — *J. Yule*, Observat. on the Contag. Fever prevalent in Edin. 8vo. Edin. 1818. — *D. Rotondo*, Rapporto sulla Febbre Petecchiale dell' Anno 1817, 8vo. Nap. 1818. — *E. Hale*, History of the Epid. Spotted Fever in 1814, 8vo. Boston, 1818. — *R. Graham*, Practical Observations on Continued Fever, 8vo. Glasg. 1818. — *W. Brown*, Attempt to estimate the Power of Medicine in controlling Fever, 8vo. ed. 1818. — *F. Buffa*, Fatti ed Osservazioni sulla Febbre Epid. Petecchiali, 8vo. Firenz. 1819. — *S. Lassis*, Recherches sur les Causes des Maladies Epid. appellées Typhus, 8vo. Paris, 1819. — *H. Clutterbuck*, Observat. on the Prevent. and Treat. of the Epidemic Fever, 8vo. Lond. 1819. — *J. Crampton*, Med. Report of the Fever Department in Steevens's Hospital, 8vo. Dubl. 1819. — *W. O. Porter*, Remarks on the Causes, &c. of the Epidemic commonly called Typhus Fever, 8vo. London, 1819. — *A. Rossi*, Brevi Lumi sul Tifo Contagioso, 8vo. Vicenza, 1819. — *D. J. H. Dickson*, Observat. on the Prevalence of Fever, and on the eminent Utility of Houses of Recovery, 8vo. Bristol, 1819. — *E. Percival*, Practical Observat. on the Treatment, &c. of Typhus Fever, 8vo. London, 1819. — *D. G. Palloni*, Comment. sul Morbo Petecchiale dell' Anno 1817, 8vo. Livorno, 1819. — *B. Welsh*, On the Efficacy of Bloodletting in the Epid. Fever of Edin. 8vo. Edin. 1819. — *G. Tasca*, Patologia Nosologica sulla Febbre Petecchiale, 8vo. Nap. 1819. — *J. C. Prichard*, History of the Epidemic Fever of Bristol, 8vo. Lond. 1820. — *G. Kerr*, Memoir concerning the Typhus of Aberdeen, in 1818–19, 8vo. Aberd. 1820. — *W. Harty*, Histor. Sketch of the Epid. Fever of Ireland during 1817–19, 8vo. Dubl. 1820. — *A. F. Chomel*, De l'Existence des Fièvres, 8vo. Paris, 1820.; et Des Fièvres et des Mal. Pestilentiellies, 8vo. Paris, 1820. — *Hamilton*, Trans. of Med. Chirurg. Soc. of Edin. vol. i. p. 296. (*Of fear in propagating fever.*) — *A. Omodei*, Del Governo Politico-medico del Morbo Petecchiale, con un Prospetto Compar. della Febbre Petecchiale, che ha regnato Epid. nella Lombardia vel 1817, 1818, 8vo. Mailand, 1822. — *Proudfoot*, in Edin. Med. and Surg. Journ. vol. xviii. p. 374. — *Graham*, in Ibid. vol. xiv. p. 534. — *Holmes*, in Ibid. vol. xiv. p. 534. — *Hunter*, in Ibid. vol. xv. p. 234., vol. xvi. p. 313. — *H. Edmonston*, in Ibid. vol. xiv., and vol. xix. p. 226. — *F. E. Acerbi*, Dottrina Teorico-pratica del Morbo Petecchiale, &c. Mail. 1822. — *Pring*, Principles of Pathology, p. 104. — *J. R. Park*, The Pathology of Fever, 8vo. Lond. 1822. — *G. Andral*, Clinique Médicale (t. i. *Fièvres*), 8vo. Paris, 1823. — *J. B. Monfalcon*, Essai sur les Fièvres Adynamiques et Ataxiques, 8vo. Lyon. 1823. — *N. Smith*, A Practical Essay on Typhus Fever. New York, 1824. — *F. E. Fodéré*, Leçons sur les Epidémies, t. iii. p. 376. *et seq.*, et t. iv. p. 100. *et seq.* — *Ozanam*, Hist. Méd. des Maladies Epidémiques, t. iv. p. 155. *et seq.* — *J. Black*, A Compar. View of the more Intimate Nature of Fever, &c. 8vo. Lond. 1826. — *Brétonneau*, De la Dothinentérie. Paris, 1825. — *Trousseau*, Archives Génér. de Méd. t. x. p. 67. 169.; et *Rigot*, Ibid. t. xii. et t. xiii. — *G. Bakker*, Epid. quæ An. 1826 Urbem Groningam afflixit, in brevi Conspectu posita. Groning. 1826. — *Sandwith*, On the Fever Epid. at Bridlington, 1818–19, and Lond. 1820, in *Johnson's Med. and Chir. Rev.* vol. ii. p. 203.; *Med.-Chirurg. Rev.* July, 1819, p. 58.; Ibid. vol. i. p. 39. — *Grattan* and *Crampton*, in Trans. of Irish Coll. of Phys. vol. i. p. 433. — *Percival*, in Ibid. vol. i. p. 243. — *H. Marsh*, in Dubl. Hosp. Reports, vol. iv. p. 454. — *Fixeau* Rév. Méd. t. i. 1824, p. 185. (*The*

epid. of Paris in 1823.) — *Neumann*, Journ. des Progrès des Sc. Méd. t. v. p. 111. (*Of ulceration of the intest. in typhoid fever.*) — *Vacquié*, Rêvue Méd. t. iv. 1825, p. 475.; et Journ. Comp. des Sc. Méd. for July, Aug. and Nov. 1825. (*Of lesions of abdom. viscera in putrid fevers.*) — *Leuret*, Sur le Dothinentérite Epidémique, in Archives Génér. de Méd. t. xviii. p. 161. 453. — *M. Gendron*, in Ibid. t. xx. p. 127. 285. 361. 599. — *Mayor*, in Ibid. t. xix. p. 611. — *Arch.* in Ibid. vol. i. p. 137. — *Brettonneau*, in Ibid. t. xxi. p. 57. — *Louis*, in Journ. Hebdom. de Méd. t. i. p. 578. — *Lobstein*, Repert. Génér. d'Anat. et Phys. t. ii. p. 342. — *Rasori*, Rev. of his Work in Med. and Phys. Journ. vol. xliii. p. 68. 155. — *Omodei*, his Work rev. in Journ. Univers. des Sc. Méd. t. xxiii. p. 69. — *Tommasini*, in Archives Gén. de Méd. t. vi. p. 126.; and Med. Gazette, vol. v. p. 520. — *J. Burne*, A Practical Treatise on the Typhus or Adynamic Fever, 8vo. Lond. 1828. — *F. A. Popken*, Hist. Epid. Malig. Anno 1826 Febræ Observatæ. Brem. 1827. — *Alison*, in Lancet, No. 337. p. 655. — *Bayle*, Rêvue Méd. t. ii. 1826, p. 89. (*Putro-adynamic fever — experiments with the blood.*) — *M. Good*, Study of Medicine, by *Cooper*, vol. ii. *passim*. — *Bright*, Reports of Medical Cases, &c. 4to. Lond. 1827, p. 178. *et passim*. — *W. Stoker*, Pathol. Observat. parts i. ii. and iii. On Continued Fever, &c. 8vo. Dubl. 1829. 30. — *P. C. A. Louis*, Recherches sur la Maladie connue sous les Noms de Gastro-entérite, Fièvre Putride, Typhoïde, &c. 2 tom. 8vo. Paris, 1829. — *S. Smith*, Treatise on Fever, 8vo. London, 1830. — *A. Tweedie*, Clinical Illust. of Fever, 8vo. 1830; and Cyclop. of Pract. Med. vol. ii. art. *Fever*. — *M. E. A. Neumann*, Handb. der Medicinischen Clinique, b. iii. Abth. i. *passim*. — *W. St. vens*, Observ. on the Healthy and Dis. Prop. of the Blood, 8vo. Lond. 1832, p. 163. — *Alison*, in Ed. Med. and Surg. Journ. vol. xxviii. p. 237.; and Outlines of Pathology, 8vo. Ed. 1834, p. 205. *et passim*. — *R. Millar*, Lectures on the Contagious Typhus Epid. in Glasgow, &c. in the Years 1831 and 1832, 8vo. Glasg. 1833. — *Elliotson*, in Medical Gazette, vol. x. p. 145.; and in Lancet, vol. xvii. p. 206. 463. — *W. P. Dewees*, Practice of Physic, 8vo. Philad. vol. i. — *Craigie*, Clinical Reports on Fever, Edin. Med. and Surg. Journ. vol. xl. p. 257. — *Lawn*, On the Use of Wine in Fevers, Ibid. vol. xxxiii. p. 82. — *Graves*, Lectures, in Med. and Surg. Journ. vol. iii. iv. vi. and vii. *passim*. — *F. Boott*, Memoir of the Life and Medical Opinions of *J. Armstrong*, and an Inquiry into the Facts connected with the Forms of Fever attributed to Malaria, &c. 8vo. 2 vols. Lond. 1833-34. — *A. F. Chomel*, Leçons de Clinique Médicale, &c. par *Genest*, Fièvre Typhoïde, 8vo. Paris, 1834. — *W. Stokes*, in Lond. Med. and Surg. Journ. vol. vi. et vii. *passim*. — *R. Graves*, in Ibid. vol. vi. et vii. *passim*; and in Dublin Journ. of Med. and Chem. Science, vol. viii. p. 136. — *J. H. Peebles*, On Petechial Fevers and Petechial Eruptions, Edin. Med. and Surg. Journ. vol. xlv. p. 356. — *H. M' Cormac*, An Exposition of the Nature, Treatment, and Prevention of Continued Fever, 8vo. Lond. 1835.

FEVER, PUERPERAL; see PUERPERAL DISEASES.

FEVER, SCARLET; see SCARLATINA.

FEVER, YELLOW; see PESTILENCES.

FIBROUS TISSUE — ALTERATIONS OF THE.

CLASSIF. — SPECIAL PATHOLOGY — *Morbid Structures.*

1. *A. The Fibrous System* consists — 1st. Of *fibrous membranes* — *membranæ fibrosæ* — as the periosteum, the cerebral and spinal dura mater, the fibrous capsules, the sheaths of tendons, the aponeurotic expansions, the sclerotica, the capsule of the corpora cavernosa penis and of the clitoris, &c., the tunica albuginea, and the membranes proper to the spleen and kidneys; — 2dly, Of *fibrous cords*, in which the fibres are formed into fasciculi — *organa fibrosa fascicularia*. — Several of the *former* should be viewed as compound structures; as the dura mater, the tunica albuginea, the fibro-synovial sheaths, &c.; but the fibrous tissue constitutes their chief basis. With the exception of the fibrous membranes of a few glandular organs, it is easy to demonstrate that all the fibrous structures are connected together, and that the periosteum is the centre and basis of connection. This tissue consists of whitish, or grayish, shining, satiny, fibres of great fineness and strength. These are interwoven in various directions, in the first division of this tissue; and are placed parallel and very

close to each other, in the second. Their cohesion is very great. Hence the fibrous tissue is the strongest in the body. Although it must be inferred to possess vessels and nerves, yet neither have been actually traced into it. That it is endowed with vital properties cannot be denied; but it manifests them obscurely in health, but often very remarkably in the course, or as a consequence, of certain diseases. Its physical properties are most perfect when the powers of life are energetic, and are much impaired when these are depressed or exhausted. During prolonged debility, and in cases of extreme vital exhaustion, the cohesion of this tissue is diminished, and laceration or extension of it takes place with less violence. During constitutional disorder, or contamination of the system by specific maladies, and in the scrofulous or gouty diathesis, it often becomes the seat of morbid action, and then evinces vital properties in a most evident manner. Injuries and irritations of this tissue, particularly when the vital functions are impaired or disordered, are often the source of the most violent and dangerous affections. — The fibrous tissue, however, is, with the exception of the periosteum and the capsules of joints, not very prone to disease; and, even when these are affected, a scrofulous or syphilitic taint has been the cause.

2. *B. Leaving out of consideration the congenital alterations of this tissue*, I will briefly notice those changes of it which are usually the result of disease. — *a. Fibrous parts are seldom thinner than natural, or atrophied.* — *b. Thickening* is much more frequent, and is evidently the result of slow inflammatory action. — *c. They may also be expanded or distended* by morbidly increased bulk of the organs which they envelope. We occasionally meet with this change in the fibrous coverings of the spleen, kidneys, articular capsules, &c. When the expansion arises from the accumulation of fluid, it is generally attended with thinning; and then, in some cases, the distension is chiefly in one part only, in the form of a sac, or is irregularly elongated. But the expansion may also be conjoined with thickening, as when it has proceeded from the changes consequent upon an inflammatory state of the contained parts, in which the fibrous envelope itself had participated, as in diseases of the spleen, &c. — *d. The articular ligaments and capsu'es, however, are frequently elongated and expanded* without any internal change, and merely from diminished tone or vital cohesion — in some cases so much so, as to give rise to dislocations. — *e. Fibrous parts may be also too short or too narrow. Morbid contractions* are observed in tendons and ligaments, and are generally the result of inflammatory irritation consequent upon great extension, cramp, &c. — *f. The changes of colour* met with in this structure are generally associated with change of organisation, excepting in jaundice. The morbid colours most frequently observed, are various shades of yellow, seldom brown, and rarely black, as in melanosis.

3. *C. The continuity of this structure is sometimes destroyed*; but generally from wounds, sudden extension, as in dislocations, and external violence of any kind. Continuity may likewise be destroyed by purulent collections, by tumours, and various morbid depositions between its fibres; but there is here, with a few exceptions, rather

an expansion of the structure than actual breach of continuity. Incised wounds of this tissue heal in general with tolerable ease, in a healthy state of the system. But this is by no means the case when the habit or constitution is in fault, or when there is obvious disorder of the stomach and liver; and the difficulty is still further increased if the injury is attended with loss of substance, or when the tissue is lacerated. In these latter, the continuity of structure is in some measure supplied with cellular tissue, which becomes very dense by degrees, but never altogether tendinous. Hence the disposition to rupture or dislocation that exists so long, and indeed ever after such accidents. The chief exception to this is presented by the periosteum on some occasions, where it seems to have been quickly restored.

4. *D.* The texture of fibrous parts is changed generally by *inflammation* and its effects. But this disease is not frequent in fibrous structures, excepting the periosteum, the articular ligaments and capsules, and the dura mater.—In all these parts, however, it more frequently follows external injuries, than arises spontaneously. When it is spontaneous, it is almost always merely a concomitant of other diseases of a constitutional kind, such as *scrofula*, *syphilis*, *gout*, and *rheumatism*. The inflammation of this structure is rarely of an acute kind, excepting in some forms of gout and rheumatism; and in these the inflammatory state is consequent upon, and subordinate to, a morbid condition of the organic nerves, rather than identical with that which is caused by external injuries, or which assumes the phlogistic character. These specific forms neither pass through the same phases, nor terminate, as common phlogosis. The inflammation, also, proceeding from the scrofulous and syphilitic taint possesses the characteristic features of those specific diseases.

5. *a.* The course of inflammation is much more frequently slow; and often the phenomena are so indistinct, as to be overlooked. The changes thereby induced are generally co-ordinate with the activity and degree of the inflammatory action. *Redness*, in various degrees of depth, and attended with different states of vascular injection, is usually present. In some cases, there is a diffused rose-red, especially when the inflamed tissue has access to the air. In others, more or less large and numerous red spots or irregular streaks are observed. In many, the inflamed part has a more or less yellowish colour; and if it be naturally glistening, this appearance is entirely lost. After chronic, or often-repeated attacks of inflammation, other discolourations are sometimes remarked—the parts being either dark grey, brownish, livid, or even blackish.

6. *b.* *Swelling* is seldom remarkable in inflamed fibrous structures. But if the inflammation continue long, or if it recur frequently without complete resolution, fibrous organs, or the cellular tissue surrounding fibrous structures, are generally greatly swollen, and their boundaries indistinct, with a gelatinous fluid infiltrated into the adjoining texture, giving it a reddish, soft, and oedematous appearance. When the intensity of the inflammation is very high, it runs tediously into suppuration; the swelling and oedematous infiltration of the adjoining cellular substance at first increases, whilst the fibrous tissue wastes,

the effused fluid, at various points, afterwards assumes a puriform appearance, increases, is concentrated, and at last more or less destroys this structure, the swelling at the circumference of the part becoming somewhat diminished.

7. *ii.* *INFLAMMATION OF THE FIBROUS STRUCTURE OF THE JOINTS* may occur primarily in this part, or extend to it from the lining synovial membrane, which, like other serous membranes, inflames readily, and in which the inflammation of joints most frequently commences. Inflammation of joints, implicating their fibrous structures, generally arises from external injuries, from metastasis of inflammation from other parts, from pus or morbid secretions absorbed into the circulation, from syphilis, gout, rheumatism, &c., and occasions reddening, swelling, softening, &c. of the synovial membrane. If the inflammation be not resolved, there is consequent secretion into the cavity of the joint, sometimes of a fibrinous lymph occasioning ankylosis, but more frequently of a puriform matter, or of a fluid, which, after being retained there, assumes a puriform character, and which often softens or erodes the cartilaginous coverings of the heads of the bones. Frequently, also, inflammation of joints commences in the fine membrane lining the cartilages, or in the articular extremities of the bones themselves. This commonly occurs from the scrofulous and syphilitic taints, and gives rise to the *caries articularum centralis vel interna*, of RUST. When the disease originates in the synovial membrane or bones, the fibrous, fibro-cartilaginous, and even the bony parts of the joints themselves, are sometimes co-affected. This is especially the case when the causes act violently on the joint and affect equally all the tissues composing it, as after a violent injury, such as a penetrating wound, compound dislocation, or fracture extending into it. In all such cases, an acute, and progressing general inflammation of the joint takes place, on which ankylosis, abscess, or caries, are usually consequent.

8. *A.* In the scrofulous and rheumatic, however, a more undecided and chronic state of inflammation occurs, either spontaneously or from injuries, occasioning changes in the joints, which, according to their extent, seat, and symptoms, have been called *morbus coxarius*, *hip disease*, *claudicatio* or *lameness*, *luxatio spontanea* or *spontaneous luxation*, *fungus articularum*, *articular fungus*, *white swelling*, &c. However, with all these names, it is essentially the same disease. The joint is more or less remarkably swollen, less movable than in the healthy state, and always somewhat bent. The swelling is, at certain parts, hard, firm, elastic; at other parts, more doughy, or even obscurely fluctuating. The integuments, to the last, even when sinuses are formed, remain unchanged, although sometimes slightly varicose, with a hardened state of the subjacent cellular and adipose tissues. The muscles surrounding the joint often appear pale and, together with the adjoining cellular substance, infiltrated with lymph. The articular ligaments are more or less swollen, of a dull hue, frequently without any distinct fibres, hardened in some parts and softened in others, and often consolidated with the surrounding cellular structure. They are also whitish in some patches, and in others discoloured, generally converted into a mass containing minute cavities filled with lymph, a

gelatinous fluid, or ichorous pus. The internal articular ligaments, the cartilaginous coverings of the bones, and the synovial membrane are entirely or partially destroyed. The bones either primarily or secondarily affected are, in a greater or less degree, inflamed, softened, swollen, and become, internally carious; or they are but little swollen, tolerably hard, yet superficially eroded, or destroyed by caries. Owing to this carious state of the heads of the bones, whether attended with swelling or not, dislocation takes place. The articular cavity contains at first a large quantity of thickish, albuminous-like, often a pale reddish synovia; and, in later stages of the disease, if the joint be more or less destroyed by suppuration, a thin, frequently foul-smelling, pus, mixed with blood, cartilage, and cartilaginous fragments, fill up entirely or partially the cavity of the joint (Otto).

9. *B. Ossification* is frequently observed in the fibrous structure, particularly in the ligaments and dura mater, and less frequently in the periosteum, the tendons, the fibrous membrane of the spleen; and but rarely in the other parts of this system. It is to be viewed as a consequence generally of slow inflammation, and occurs in different forms: as in some cases only the fibro-cartilaginous base of bone is deposited in plates or roundish-flat prominences; more frequently phosphate of lime is secreted either in distinct spots or small masses surrounded by a circle or plexus of vessels, or in the form of splinters, or, lastly, in larger masses, involving the fibrous tissue equally throughout. If the articular ligaments undergo this change, they are then usually *shortened*, occasioning *stiffness* of the joint, or more or less complete *ankylosis*, according to the extent of the ossification. An *earthy mass*, less resembling bone than chalk or gypsum, consisting principally of the urate of soda—*gouty tophus*—is often deposited in the ligaments, in the neighbouring aponeurosis, and periosteum of one or several joints, in gouty persons, at first in a soft state, but gradually becoming hard, and often in large quantity.

9. *C. Sphacelation*, or *gangrene*, rarely occurs as a termination of inflammation. It is met with primarily in those fibrous parts which are well supplied with blood-vessels, viz. the periosteum, dura mater, fibrous envelope of the spleen, &c. In the tendons, aponeurosis, and articular ligaments, it very rarely occurs primarily, excepting when they are exposed to the air by wounds or ulcers, in which case they often are destroyed and exfoliate together with the surface of the bones and cartilages. Fibrous structures, however, are often attacked with mortifications in conjunction with, or in consequence of, gangrene of the adjoining parts. Anthrax sometimes extends to and destroys fibrous tissues; and when mortification attacks a limb, the articular ligaments participate so entirely, that a spontaneous separation often takes place at a joint.

10. *D. Adventitious productions* are but rarely observed in the fibrous system.—*a. Encysted tumours* seldom form in it, if we except those bursal tumours which occur on the tendinous sheaths and articular capsules, and partly between the tendinous fibres of the aponeurosis, and especially on the elbow-joint and knee-cap, and which have their origin in the mucous bags placed in these situations.—*b. Tubercular formations* are equally rare in fibrous parts. Scrofulous deposits

are, however, occasionally found in the dura mater and periosteum.—*c. Sarcomatous and fungous tumours* are more frequent in fibrous structures, particularly in the periosteum. Fungous growths on the tendons are more rare, as are the sarcomatous swellings upon the articular ligaments.—*d. Carcinoma*, or *cancer*, does not occur primarily in this system, but attacks it secondarily equally with other parts.

11. *E. The changes observed in the contents* of cavities formed by fibrous membranes are frequently marked and important. Morbid collections, as a watery serum, a gelatinous fluid, puriform matter, blood, &c., are not infrequently found in the aponeurotic sheaths surrounding or separating the muscles in the cavities of joints. The *synovia* also varies exceedingly; sometimes it is deficient in quantity, so much so as to occasion stiffness, creaking or a peculiar noise of the joint. More commonly it is in unusual quantity, particularly in all inflammatory states of the synovial membrane, but occasionally without any distinct inflammation, as in the knee-joint, in rheumatic, rickety, or syphilitic subjects. Sometimes the effusion exists to such a degree that the joint is more or less swollen, or even dislocated, or its use prevented. This local state of disease has usually been called *dropsy of a joint*, *hydrops articulorum*, *hydrarthrus*, *meliceria*. The synovia is occasionally turbid, reddish, watery, albuminous, gelatinous, &c., as well as increased in quantity.

12. *F. Substances adventitious to the situation* have occasionally been found in the cavities of joints—*a. Blood* is rarely observed; but—*b. Pus* occurs more frequently, it either having been produced within the joint itself, from an acute inflammation of the synovial membrane, and of the bony cartilages and ligaments forming the joint, or having made its way into the cavity from without. I have, however, seen cases where pus has rapidly collected in one or more joints after *phlebitis*, or after the absorption of this fluid from other and distant parts. It has been supposed, that the pus, in such cases, has been secreted or deposited in the cavity of the joint, as it has passed into the circulation from the situation where it was primarily formed, without previous inflammation of the joint itself. But the presence of this morbid secretion in the blood may have excited inflammatory action of the synovial membrane, rapidly passing into the suppurative stage. In most of such cases, the parts containing the pus have been found eroded, and have presented other changes usually consequent upon inflammation, even when vascular injection has been absent. The question is, whether such changes have taken place previously or subsequently to the secretion of pus in the joint? That the more advanced of them are consequent upon the production of this fluid may be admitted; but that inflammatory injection and action preceded, and quickly produced, the purulent collection, seems most probable.

13. *c. Cartilaginous concretions*, which have grown from the inner or expanded surface of the synovial membrane, by necked appendages, and been subsequently broken off, are occasionally found in the cavities of joints, either entirely loose, or attached to them by thin threads. They are at first soft, then mostly cartilaginous, sometimes partly cartilaginous and bony; more rarely altogether bone; usually rounded, but occasionally

flattened or angular; and varying much as to size and number. LIEUTAUD has adduced instances of *quicksilver* having been found in the cavities of joints; but such occurrences must have been rare, and are now never observed. (See art. PERIOSTEUM.)

BIBLIOG. AND REFER.—i. ALTERATIONS OF FIBROUS STRUCTURES IN GENERAL.—*Bartholinus*, De Diaphrag. Struct. Nova. Paris, 1676.—*Morgagni*, De Sed. et Caus. Morb. Epist. lxi. s. 19.—*Vestlingius*, Observ. Anatom. Epist. xv.—*Walter*, Mus. Anatom. vol. i. p. 144.—*Hoernigk*, in *Haller's Disput. Med. Pract.* t. vi. p. 344.—*Lieutaud*, Hist. Anat. Méd. t. ii. p. 99.—*Bacheracht*, De Morbis Ligamentorum, 1750.—*Huhn*, De Rite Cognoscenda et Curanda Systematis Fibrosi Inflammatione. Halæ, 1826.—*Rayer*, in Archives Générales de Méd., March and April, 1823.—*Boyer*, in Ibid., April, 1823.—*Walter*, Museum Anat. vol. i. p. 144.—*Acrel*, Chirurg. Vorfälle, b. ii. p. 380.—*Lavernet*, Journ. de Méd. Contin. vol. ii. p. 248.—*Lloyd*, Treatise on Scrofula and its Connection with Diseases of the Spine, &c. Lond. 1821.—*Götz*, De Morbis Ligamentorum, &c. Halæ, 1798, p. 32. et seq.—*Wilson*, Lectures on the Structure of the Skeleton, &c. Lond. 1820.—*Otto*, Selt. Beobachtungen, b. ii. p. 32. No. 11.—*Chomel*, Sur le Rheumatisme. Paris, 1815.—*Villermé*, in Rév. Méd. t. v. p. 68.—*Cruveilhier*, Essai sur l'Anat. Path. t. ii. p. 73.—*M'Lellan*, in Philadelph. Monthly Journ. &c. Nov. 1827, p. 256.—*Howship*, in Trans. of Med. and Chir. Soc. vol. viii. p. 95.—*Delpech*, Chirurg. Clinique de Montpellier, vol. i. passim.—*Lee Fearn*, in Med. Recorder, vol. xii. art. 1.—*Cornish*, in Lond. Med. Repos. vol. xvii. p. 200.—*Nees*, in *Hufeland's Journ. d. Prak. Heilk.* vol. xvi. p. 180.—*W. Wallace*, in Transact. of Associat. of Dubl. Phys. vol. v.—*Fourcroy* and *Vauquelin*, in Anal. du Mus. d'Hist. Nat. t. i. p. 93, t. ii. p. 201, t. iv. p. 329.—*Ehrmann*, Compte rendu des Trav. Anatom. &c. Strasb. 1827, p. 22.—*Lobstein*, in Ibid. 1824, p. 16.

Exfoliation of Tendons may occur in whitloes, or during suppuration from punctured or poisoned wounds, as in dissection, &c. I have seen three such instances. *Fungus hæmatodes* seated in fibrous parts is not rare.

ii. ALTERATIONS OF THE FIBROUS TISSUES OF JOINTS.—*A. Monro, primus*, in Ed. Med. Essays and Observat. vol. iv. p. 242.—*Lieutaud*, Histor. Anatom. Medica, vol. iii. p. 93.—*Park*, On Dis. of Joints. Lond. 1783.—*Curtmann*, De Morbis Articulorum, &c. Giess. 1797.—*Enckelmann*, De Fungo Articulorum, 4to. Arg. 1749.—*Müller*, De Fungo Articulorum. Gött. 1780.—*Ford*, On Disease of the Hip Joint, &c. Lond. 1794.—*Palletta*, Exercit. Pathol. vol. i. p. 30—58.; et De Claudicatione Congenita. L. B. 1787.—*Crowther*, On Disease of the Joints, &c. Lond. 1808.—*Sprengel*, in *Rust's Magazin f. d. ges. Heilk.* b. ix. part. ii. p. 301.—*Nicolai*, in Ibid. b. xxii. part. i. p. 3.—*Ford*, Observ. on Dis. of the Hip Joint, &c. 8vo. Lond. 1810.—*Dupuytren*, in Répert. Génér. d'Anatomie Pathol. &c. vol. ii. part. iii. p. 150.—*B. C. Brodie*, Pathological and Surg. Observat. on Diseases of Joints, &c. Lond. 1818.—*Gniest*, De Morbis Articulorum. Halæ, 1826.—*Geiss*, De Morb. Articulor. &c. Halæ, 1826.—*Margot*, Archives Générales de Méd. May, 1826.—*Otto*, Selt. Beobach. part. ii. p. 42.—*Taaks*, De Hydrope Articulorum, 8vo. Berl. 1825.—*Cruveilhier*, in Nouv. Biblioth. Médicale, Janv. 1827.—*Laennec*, in Dict. des Sciences Médicales, t. iv. p. 123.—*D. Craigie*, Elements of Gener. and Patholog. Anat. p. 512.—*J. F. Meckel*, Man. d'Anatomie Génér. et Patholog. &c. par *Jourdan*, &c. t. i. p. 383.—*A. W. Otto*, Compend. of Hum. and Comp. Pathol. Anatomy, by *J. F. South*, 8vo. Lond. 1831, p. 229.

FLATULENCY.—ΣΥΝΦΥΣΑ, ΦΥΣΗ. *Flatusitas*; *Flatus*; *Flatulentia*; *Aërifluxus*, Sauvages. *Pneumosis Ventriculi*, et *Pn. Enterica*, J. P. Frank. *Pneumosis*, Chomel. *Limosis Flatus*, Good. *Flatusité*, Fr. *Die Blähung*, Windigkeit, Germ. *Flato*, Ital.

CLASSIF.—1. Class, Disease of the Digestive Function; 1. Order, Affecting the Digestive Canal (Good). I. CLASS, I. ORDER (Author, in Preface).

1. DEFIN. *An undue formation and accumulation of air in the stomach or intestines, with frequent rejection of it.*

2. It is of some importance to ascertain the source of the flatus which is often formed so abundantly in the digestive canal. JOHN HUNTER first supposed that air is sometimes exhaled from

the blood by the vessels of secreting surfaces; and, if we view merely the results of the experiments of M. EDWARDS upon respiration, and the absorption and exhalation of various gases, by the lungs, in connection with the secretion of air into the swimming-bladder of fishes, this opinion will appear not ill-founded, even independently of the support it derives from pathological observation. In such cases we have reason to infer that it is not air, as it exists in the surrounding atmosphere, that is thus exhaled, but its constituent gases. The experiments performed by MM. GÉRARDIN, MAGENDIE, and CHEVREUL have thrown much light upon the question as to the source of the gases found in the digestive canal, as well as upon their composition; and have shown, that they are partly exhaled from the digestive mucous surface.—It would appear, from the researches of these writers, that they consist, in the stomach, of nearly three parts in four of azote, the fourth part being oxygen and carbonic acid; and, in the intestines, of carbonic acid, azote, carburetted hydrogen, and hydrogen, in various proportions. It may, therefore, be inferred that the air which collects in the digestive canal is derived from three sources: 1st. From the common air swallowed with the food;—2d. From the changes or decomposition of the ingesta, and of the contents of the canal generally;—and, 3d. From the occasional exhalation of gaseous fluids from the mucous surface during certain states of local and constitutional disorder. The oxygen found in the stomach, amounting to eleven parts in a hundred, is most probably derived from the first of these sources. It is, however, either absorbed from this situation, or combines with other substances, as none is found beyond the pylorus. The azote and carbonic acid may be attributed partly to the last source; whilst a portion of both, and the whole of the hydrogen and its compounds, may be assigned to the second.—The air, which is generated so rapidly, and eructated so frequently, during acute inflammatory diseases, particularly in gastritis, hepatitis, &c., must be exhaled from the irritated mucous surface, inasmuch as there is no other source existing in such circumstances to which it can be attributed, especially when the constant vomitings, and frequent evacuations from the bowels, have left nothing in the *prima via* capable of furnishing the enormous quantity of air which is often ejected.

3. Flatulency, since the time of CULLEN, has been very generally viewed as a symptom of dyspepsia and of other diseases. But I agree with SAUVAGES, GOOD, and several other writers, in considering it to be occasionally a primary disorder. Whether it be idiopathic or symptomatic, its phenomena, and the disorders consequent upon it, are different according to the part of the alimentary canal in which the flatus is generated or confined. I shall, therefore, treat of this affection, *first*, as respects the stomach and œsophagus—*Flatulentia ventriculi*; and, *secondly*, with reference to the intestines—*Flatulentia Intestinorum*. But although it may be seated in either the stomach or the bowels more particularly, it very frequently exists in both at the same time.

4. I. FLATULENCY OF THE STOMACH will be considered at this place—(a) in respect of its idiopathic occurrence; (b) as a symptom of other disorders; and (c) with reference to the disturbances

it tends either to induce or to aggravate.—*A.* *Primary or idiopathic flatulency of the stomach* is met with chiefly when the stomach is empty, or after the process of digestion in this viscus is completed; and is seldom associated either with impaired appetite, or diminished powers of digestion. It is most troublesome in the morning before breakfast, or during long fasting; or when an unusually protracted period has elapsed between meals. In such cases, the flatus often rises into the œsophagus, producing much uneasiness and often distress, owing to its excretion being prevented by the spasmodic constriction of the upper part of this tube. In swallowing also the more solid ingesta, the bolus meets the flatus in the œsophagus, and is interrupted or impeded in its passage to the stomach. In such circumstances, a conflict sometimes arises between the descending ingesta and the ascending flatus, and a very painful *spasmodic dysphagia* is thereby induced, until the eructation of air gives relief and allows the transit of the bolus into the stomach. In this form of the disorder, the air most probably is exhaled, at least in great part, from the internal surface of the organ. In other respects the patient's health is not deranged, and the functions of digestion, defæcation, and assimilation are regularly and perfectly performed. In other instances, slight defect of organic nervous power, owing to sexual indulgences, or to sedentary occupations, is the only pathological state to which this affection can be imputed.

5. *B.* The *remote causes* of flatulency are the nervous and hypochondriacal temperaments; and all the influences and habits which depress or exhaust the energy of the organic nervous system, or lower the tone of the digestive canal, especially sedentary occupations; excessive mental exertion and anxiety; venereal indulgences; intemperance in eating and drinking; the ingestion of cold fluids, particularly when the body is overheated; exposure to a cold air, or to cold in any way, whilst the stomach is empty, or whilst fasting; neglect of the functions of the bowels; the use of bulky or flatulent vegetables, or of fruits prone to undergo fermentation, especially cucumbers, melons, salads, &c.; irregularities of diet; and previous or existing disease.—Fast eating, and imperfect mastication, often give rise to flatulency, by the quantity of air which is generally swallowed on such occasions, and by the imperfect or slow digestion which usually results.

6. *C.* *Symptomatic flatulency of the stomach* is extremely common.—(*a*) It is almost a constant attendant upon *indigestion*; and (*b*) often accompanies general *debility*.—(*c*) It is also frequent in *hypochondriasis* and *melancholia*; (*d*) and in the numerous forms of *hysteria*. In this last, the flatus often rises into the œsophagus; and whilst the reaction of the coats of the stomach propels it into this tube, spasmodic constriction of the part just below the pharynx confines it for a time, and causes a distressing feeling of suffocation, &c.—(*e*) Flatulency is an almost constant symptom of *inflammatory* and *organic affections* of the stomach.—(*f*) It generally ushers in an attack of *gout*;—and (*g*) it both precedes and attends *asthmatic affections*.—(*h*) It is a common phenomenon of all the functional, inflammatory, and organic *diseases of the liver*; and is very characteristic of accumulations of bile in the gall

ducts and gall-bladder; and of *torpor of the biliary organs*.—(*i*) It often, also, occurs in the *functional* and *inflammatory disorders of the bowels*, and sometimes in affections of the other abdominal viscera.—(*k*) It not infrequently even accompanies *chronic diseases of the brain*;—(*l*) and the *adynamic* and *malignant forms of fever*.

7. *D.* The *phenomena* usually characteristic of flatulency vary somewhat with the diseases of which it is a symptom. In the course of digestion, flatus escapes with or without noise, and often with an acid, bitter, nidorous, or foetid odour. Sometimes it is without either odour or taste; and at other times it retains the smell and flavour of the ingesta. When constriction of the cardia, or of the lower part of the œsophagus, prevents eructations, or when the coats of the stomach are so weakened, or so over-distended, as to be incapable of reacting sufficiently, *tympanitic* fulness of the epigastrium and hypochondria, with a painful sense of distension, or severe *gastrodynia*, frequent respiration, and heavy pain or oppression in the lower parts of the chest, are generally complained of. If eructations occur, especially for some hours after a full meal, acrid or rancid matters, or portions of undigested food, are frequently regurgitated at the same time, and impress the palate and pharynx with an acrid and irritating sensation, or produce an unpleasant, dry cough, by affecting the epiglottis and larynx. *Cardialgia* is then often associated with this symptom, or precedes the eructations. When flatulency precedes or attends organic lesions of the stomach, or obstructions of the liver or pancreas, the symptoms caused by, and associated with, it are often severe. Disordered action of the heart, anxiety, hiccup, *gastrodynia*, &c. being not uncommonly observed.

8. *E.* The *disorders induced or aggravated* by flatulency of the stomach, are various in different habits and constitutions. When the stomach is much distended by flatus, and especially when the œsophagus admits and retains for a time the air in its lower part, the feeling of oppression, dull pain, and the other symptoms just mentioned, are much increased. The actions of the diaphragm are impeded, and the regularity of the circulation through the cavities of the heart is interrupted by the pressure of the over-distended organs. Hence the intermissions and irregularities of the pulse, the sense of anxiety, flutterings, feeling of suffocation, and palpitations, so often associated with, or consequent upon, affections of the digestive organs. WHYTT attributes *incubus* to flatulency of the stomach, and, I believe, very justly. In delicate, nervous, and hysterical females, various symptomatic disorders, besides those now stated to arise directly from this cause, are often experienced. The modes of dress, particularly the very strait corsets used by this sex, aggravate the disorders consequent upon flatulent distension.—Severe pains of the left side, congestions of the lungs, or of the brain, headaches, convulsions, faintness, vertigo, and several anomalous complaints, often thus originate, not only in females, but also in males, especially those who are sedentary, hypochondriacal, and debilitated. In this class of persons more particularly, the pressure of the distended stomach prevents the due action of the bowels, and either impedes or interrupts the passage of fæcal matters from

the cæcum, along the transverse arch of the colon. — Thus costiveness, and functional disorders of the cæcum and large bowels are occasioned, and are often followed, by displacement of parts of the colon, and by inflammatory and organic lesions. — It is obvious, that an aggravation of disorder will be occasioned by flatulence, where any of these affections already exist.

9. *F. Infants* are very liable to flatulence, particularly when their natural food is taken too greedily, or when it disagrees and becomes acid on the stomach. In some cases, a portion of air may be swallowed by sucking; but, however occasioned, the eructations that occur are often accompanied by the regurgitation of a considerable portion of the ingesta. Flatulence is, however, most distressing and injurious when it affects infants brought up without their natural sustenance, or during the period of weaning. In them, acidity of the prima via, watery diarrhoea, or costiveness, or both alternately, morbid offensive evacuations with severe griping pains, and emaciation, terminating not infrequently in marasmus and mesenteric disease, are often observed.

10. II. FLATULENCE OF THE INTESTINES may be either *primary* or *idiopathic*, or *symptomatic*, but most frequently the latter. — *A.* The *primary* form of intestinal flatulence is evidently itself but a symptom, if we trace the disorder up to its origin, or but one of the various phenomena resulting from debility of the digestive canal — from deficient energy of the ganglial nervous system. In this form, however, the flatus is either expelled from time to time, *per anum*, or accumulates and gives rise to borborygmi, or to tympanitic distension of the abdomen; but these symptoms seldom become very urgent in this state of the disorder, unless some other affection supervenes. The bowels are generally costive, sometimes irregular; and the secretions poured into the digestive canal, both from its own surface and from the collatitious organs, are deficient, and occasionally even morbid; the flatulence and imperfect functions of these parts being the almost coëtaneous effects of the impaired influence of the organic nervous system. The air which collects in this part of the digestive tube is to be ascribed chiefly to alterations of its contents, and to exhalation from the mucous surface. — This form of flatulence may continue long without any other material disorder, excepting slight debility, want of activity, costiveness, &c.; and it may occasion, in a short time, some one of the various serious diseases about to be noticed.

11. *B. Symptomatic intestinal flatulence* is a common complaint. It is a frequent result of *costiveness*, or imperfect digestion in the bowels, particularly in the duodenum and cæcum; and of a deficient or morbid secretion from the intestinal mucous surface, and from the liver. When the quantity of air collected is great, colicky symptoms, obstinate constipation, and irregular action, or atony, of the muscular fibres of the intestines, are the usual consequences. The coats being unable to contract regularly, or sufficiently to expel the air, or obstructions being opposed to the ejection of it, various effects of a serious kind often result. Portions of the bowels react with much violence upon the distending cause, whilst other portions are distended until the contractile power of the muscular coat is almost or altogether lost.

Thus, spasmodic constriction in one part, and paralytic distension in another, are produced; and the organic sensibility of the nerves of the canal are remarkably excited or altered. Flatulent *colic* is the consequence; and, if this be not relieved, intus-susceptious, ileus, or inflammation of a portion of the bowel, may ultimately supervene. If, in addition to imperfect or morbid secretion, the tone of the muscular coat is still further reduced — when its power of reacting upon the collection of flatus is lost more generally or completely, *meteorismus* or *tympanitis* will be produced, and the abdomen will be tense, painful, or tender, and the fæcal evacuations either altogether suspended, or interrupted, and hard or scybalous.

12. Intestinal flatulence is a most common symptom in *hysteria*, and is in it generally indicated by borborygmi, in *inflammations of the bowels*, in *dysentery*, in functional and organic *affections of the cæcum*, in *hepatic disorders*, especially *bilious colic*, in the *colic from lead*, and in the bowel complaints of *children*. It is very frequently met with in the advanced stages of *typhoid fevers*; and, as I have shown, it is one of the indications of extreme adynamia with predominant affection of the bowels. HIPPOCRATES remarks (*Coac. Prænot.* l. i. 46.), that inflation of the abdomen, without rejection of the flatus, is a dangerous sign; and the accuracy of the opinion must be admitted. In low fevers, the accumulation of air is often extremely great; and whilst it is an indication of danger, it tends to increase it, by impeding the functions of respiration and circulation, as well as by exhausting the vital tone of the intestines.

13. *C.* Inflation of the bowels, particularly of the *colon*, gives rise to various symptomatic disorders, when it reaches a considerable height; and it not infrequently occasions the same affections as arise from flatulence of the stomach. Respiration and circulation are both often deranged by this cause; and congestions of the veins and sinuses of the brain consecutively induced. Hence vertigo and headaches often follow a sense of oppression in the chest, and irregularity of the heart's action. Hypochondriacal and hysterical symptoms are always aggravated by collections of flatus in the bowels; and these latter are favoured by costiveness. Hence the advantages resulting in these diseases from the use of stomachic or tonic aperients. — The colon may be also partially displaced, and adjoining parts injuriously pressed upon by collections of flatus in the large bowels.

14. III. Although flatulency very often is limited to either the stomach or bowels, presenting the pathological relations just explained, yet it also frequently extends almost simultaneously to both, or affects one or other more or less prominently. In this case, the effects produced by it will vary accordingly, and depend upon the degree in which it exists. — Flatus, moreover, is generated in other situations, as in the *uterus*, in the *urinary bladder*, and even in the *shut cavities*, but in very rare instances, particularly as respects the latter of these. In these parts, it is either exhaled from the vessels furnishing the secretions poured out on their internal surfaces, or developed in consequence of the changes which these secretions undergo during their retention. The form

ation of air in serous cavities is never, I believe, observed, excepting as a result of inflammatory action in some part of their surface that has given rise to a secretion of a sero-albuminous fluid; and it is not improbable that the air is produced by the partial decomposition of the albuminous portion of the secretion. These occurrences are more particularly noticed in other places.

15. V. TREATMENT. — *A.* In the *primary states* of the disorder, attention to *diet*, and *gentle tonics*, with mild *aperients*, will generally restore the healthy functions of the stomach and intestines in a short time. If much distress be experienced from the retention of the flatus, the addition of a *carminative* spirit or oil, as those of anise-seed, pimenta, nutmeg, or cardamoms, to the above, will give relief; but the frequent use of heating spices may be injurious in other circumstances, particularly if the complaint depend upon chronic inflammatory action of the digestive mucous surface, as is frequently the case. The practice of rejecting the air, either upwards or downwards, should not be indulged in, for, although momentary relief is thereby obtained, an increased disposition to generate it is produced, and the evil augmented. It is only when air collects to the extent of producing much disorder, that its expulsion should be procured. — In this case, any of the numerous carminatives in common use may be given, if they be not contra-indicated by the presence of inflammation. In some such instances, however, the more energetic of them may be exhibited with advantage in enemata. The extract of *rue*, or any of the *essential oils*, may be thus prescribed. — HUFELAND and others advise warm dry *aromatic epithems* to be applied over the abdomen in these cases; and THUNBERG recommends the *cajeput oil* to be rubbed upon this part, or to be given internally, when the state of the circulation and of the animal heat indicates the propriety of exhibiting carminatives. — *Charcoal*, as suggested by J. P. FRANK, and *magnesia*, if not the most efficacious, are among the safest means that can be used. The same may be said of *camphor*, and the *terebinthinates*, and the plants which owe their efficacy to either of these principles. The *subnitrate of bismuth* is often of great service, particularly when conjoined with small doses of *ipecacuanha* and *hyoscyamus*.

16. Whenever flatulency of the stomach or bowels is unconnected with inflammatory action — when the pulse is soft or weak, or not increased in frequency, when the abdomen and hypochondria are not painful on pressure, when the tongue is moist, or pale, and not red at its edges, and when there is no unusual thirst — then carminatives, antispasmodics, stimulants, and tonics, combined with one another, and with absorbents and aperients, will give relief; and they may be either given by the mouth, or administered in enemata. — But even in these cases, our chief dependence should be placed upon suitable tonics, with the use of the cold salt-water bath, and attention to the secretions and excretions, for the cure of the complaint. — If an attentive view of the case suggests the existence of inflammatory irritation in any part of the alimentary canal, the *nitrate of potash*, and the *subcarbonate of soda* or of potash, with *demulcents* or *emollients*, and weak camphor mixture, will be most appropriate. In these cases, external *derivatives*, gentle frictions

of the abdominal surface with warm *rubefacient liniments*, as recommended by WHYTT, the application of hot terebinthinate embrocations or epithems, or fomentations as used by DARWIN, will be of great service. When the complaint is connected either with slight inflammatory action, or with imperfect secretion, especially of bile; or with both, as observed in numerous instances; *deobstruents*, and *mild purgatives*, will be required. In such cases, the blue pill, or PLUMMER'S pill, or the hydrargyrum cum creta, ought to be given at bedtime, with soap, *ipecacuanha*, and taraxacum.

17. *B.* Flatulence in infants or young children ought to be treated chiefly by appropriate food and regimen, and by mild purgatives. *Magnesia* in dill-water, or in fennel-water, or in anise-seed water, will frequently give relief; but an alterative, as the hydrargyrum cum creta, will generally be required on alternate nights. The warm or tepid bath, followed by frictions of the abdomen with some warm liniment; enemata with a little common salt, and some carminative water; and an occasional dose of castor oil, with warm clothing, and pure dry air, will also be productive of benefit.

18. *C.* In the more decidedly *symptomatic states of the complaint*, the treatment should be chiefly directed to the disease on which it depends. But in these states it is generally most urgent, and hence requires the adoption of means calculated to procure immediate relief. If those already described, employed according to the peculiarities of the case, prove inefficacious, it has been recommended by REICH, PAMARD, THILOW, and PIORRY, to draw off, or to facilitate the escape of, the flatus, by a siphon, or by the introduction of a flexible hollow tube into the rectum. In most instances of difficulty, I have found the terebinthinate with aperients, enemata with either spirits of turpentine or extract of rue, and terebinthinate embrocations or liniments applied to the abdomen, succeed in procuring the expulsion of the flatus, by exciting the action of the muscular fibres of the canal. — When this complaint depends chiefly upon debility, and is associated with other disorders proceeding from this source, the means advised in the articles COLIC, COSTIVENESS, and DEBILITY, according as it may present more or less of the features of either, should be prescribed; and *diet* and *regimen* ought to receive due attention.

BIBLIOG. AND REFER. — *Hippocrates*, Περὶ Νόσων, Opera, vol. i. Vander Linden ed. — *Calius Aurelianus*, Morb. Chr. l. iii. c. 2. — *Aëtius*, Tetrab. iii. serm. i. c. 27. — *Paulus Ægineta*, l. iii. c. 38. — *Payer*, Consider. Flatuum. Lips. 1529. — *T. Kentmann*, De Exhalat. Fumos. et Flatuosis, &c. 4to. Halæ, 1591. — *Zacutus Lusitanus*, Med. Prin. Hist. l. i. hist. 37. — *Glisson*, De Ventriculo et Intestinis, tr. ii. c. 25. — *P. Cambalusier*, Pneumatologia, 4to. Paris, 1747. — *J. B. Carenî*, De Aëris Ingressu in Ventriculū ejusque Circulo, 8vo. Med. 1759. — *G. E. Zeviani*, Trattato del Flato a Favore degl' Ipocondriaci, 4to. Veron. 1761. — *Whytt*, Works, by his Son, p. 570. 699. &c. (Contains many just observations.) — *F. J. Schroeder*, Medicina Flatuum, et Morbor. exinde Pullulantium, 4to. Marb. 1773. — *Kämpfer*, Amœnit. Exot. p. 589. (According to the Japanese, flatulence is the cause of all diseases. It is common among them, and the nations of most Eastern countries, who indulge freely in the use of hot spices and other carminatives, in order to expel it.) — *G. Marurgi*, Le Malattie Flatuose. Napoli, 1786. — *Vogel*, in Hufeland, Journ. des Prak. Arzneyk. b. vi. p. 14. — *Thilow*, in Ibid. b. ix. st. ii. p. 1. — *Hufeland*, Bemerk. über Blattern, &c. p. 351. — *Reich*, in Journ. der Erfindungen, st. x. p. 95. — *F. P. Pamard*, Dissert. sur quelques Effets de l'Air dans nos Corps, et Descript. d'une Syringe Pneumatique. Avign. 1791. — *Thunberg*, De Oleo Cajæ.

puti. Upsalæ, 1797. — *J. P. Frank*, De Car. Hom. Morb. l. vi. pars i. p. 52. — *Vidal*, Sur le Gaz Animal considéré dans les Maladies. Marseille, 1809. — *Renaudin*, in Dict. des Sc. Méd. vol. xvi. p. 16. — *Chomel*, in Dict. de Médecine, t. xvii. p. 186. — *M. Good*, Study of Med. by *Cooper*, vol. i. p. 173.

FŒTUS — DISEASES OF THE.

CLASSIF. — GENERAL PATHOLOGY.

1. The *fœtus* is liable to a greater number of diseases than has generally been supposed. Some of these, together with the lesions of the foetal appendages, have been noticed in the article ABORTION, § 10. As these diseases occasion various malformations, congenital alterations, abortions, or even the death of the foetus, a brief enumeration of them will be useful in various points of view, but particularly as indicative of the sources, in which several maladies of infancy originate.

2. i. The *Causes* of foetal disease are, as respects the *mother*—violent or prolonged mental emotions; imperfect or unwholesome nourishment; excessive fulness or deficiency of blood; a morbid state of this fluid, produced by food, medicines, or disease; alteratives, as mercury, &c., in large doses, or too long continued; attempts at procuring abortion; the use of strait corsets; injuries, falls, or blows on the abdomen; a cachectic state of constitution, particularly the syphilitic and scrofulous taints; constitutional or other diseases, as eruptive, periodic, or continued fevers, tubercular consumption, &c.; venereal excesses during pregnancy; a laborious life, or inordinate physical exertion, and previous lesions of the ovaria, uterus, or foetal appendages. The chief causes as respects the father, are, predisposing only, with the exception of the syphilitic or scrofulous taints. There is every reason to believe that, if the father is aged, or debilitated, or suffering from constitutional or local disorder, associated with sexual exhaustion, at the period when impregnation is effected, the foetus will be weakly formed, and thereby predisposed to disease, especially when the mother is exposed, during utero-gestation, to the more energetic causes, or to those just enumerated.

3. ii. The *Diseases* observed in the foetus, either consequent upon one or more of the above causes, or occurring without any assignable cause, are—1st. *As respects the cerebro-spinal system*—effusions of fluid in the ventricles, or in the spinal canal, or between the membranes, giving rise to hydrocephalus, spina bifida, imperfect or arrested formation of portions of the brain or spinal cord, to inflammatory congestion of the membranes, or of portions of the brain or cerebellum (LOBSTEIN), with spasmodic contractions of the limbs, &c.; — 2d. *As regards the thoracic viscera*—inflammation and suppuration of the thymus gland (VÉRON); tubercles in the lungs, in the early stages (BILLARD, LANGSTAFF, and myself), and in a state of softening (HUSSON); inflammation of the substance of the lungs, and of the pleura; dropsy of the pleural cavities; hydro-pericardium, and malformations of the heart; — 3d. *As respects the abdominal viscera* inflammation, and even ulceration, of the internal surface of various parts of the alimentary canal; tubercles in the liver (HOOGHEVEN, HUSSON), in the mesentery (OEHLER), and in the spleen (BILLARD); inflammations of the liver (BRACHET, VÉRON), of one supra-renal capsule (ANDRAL), of the peritoneum (DESORMEAUX, VÉRON), of the small intestines (BIL-

LARD); dropsy of the peritoneal cavity in various degrees (DUGÉS); enlargement of the mesenteric glands; accretions of the peritoneum, and of several viscera, from chronic inflammation (ANDRY, and myself); retention of urine, and excessive distension of the bladder, ureters, and pelves of the kidneys, from obstructions to the discharge of it in the liquor amnii (SANDIFORT, MOREAU, PH. PINEL, A. COOPER, CHAUSSIER, DUGÉS, &c.); rupture of the bladder (DUGÉS); lesions of the kidneys, and other parts of the urinary apparatus (RUYSCH, HOFFMANN, WRISBERG, VROLIK, BOETSCHLER, DENIS, BOIVIN, &c.); and obliterations of canals, and occlusions of their outlets, as of those of the alimentary canal, and of the urinary and generative organs; — 4th. *As respects the general frame*—intermittent fevers, small-pox (DEUTTEL, &c.), and other eruptive fevers (ANDRY); syphilis, and jaundice (HEY, ANDRY, BAUMES, &c.); — and, 5th. *As regards external parts*—malformation of the palate, mouth, and lips; dislocation of various joints, and even of the hip joint (DUPUYTREN, CHAUSSIER, NORTH); contractions of muscles; fractures, gangrene, &c. of the limbs (JOERG); hardening of the cellular tissue (UZEMBEZIUS, MAURICEAU, STRATFORD, &c.); anasarca, and œdema of one or more limbs (GARDIEN, DUGÉS, ANDRY, &c.); hydrocele (ANDRY); various tumours and nævi; and several affections of the skin (GOECKEL, LEDEL, OEHLER, CHAUSSIER, ANDRY, &c.).

4. My limits prevent me from remarking upon these; but it may be mentioned, that MAURICEAU was born with the small-pox; and that jaundice may arise in the foetus—1st, from the same causes as induce it in the adult; and, 2dly, from jaundice in the mother. M. DUGÉS mentions that a lady was subject, during pregnancy, to colic and jaundice from biliary calculi; and, in four instances, the children were born deeply jaundiced. I attended, some years since, a lady in tubercular consumption, who was delivered, in the seventh month, of an emaciated and very small foetus, that died a few days afterwards. On examination, the lungs were found loaded with tubercles, and the mesenteric glands enlarged. M. TONNELÉ found an enormous fungoid tumour (*fungus hæmatodes*) on the right side of the head of a foetus; and M. VOISIN, a polypus adhering to the posterior part of the palate.—The existence of worms in the bowels of the foetus has been asserted by some writers, and denied by others. The evidence is not sufficiently conclusive either one way or another.

5. iii. The *Death of the Fœtus* may take place from the greater number of these diseases, or from lesions of the placenta, umbilical cord, or membranes (see ABORTION, § 10.). Although there are numerous exceptions to the rule, the more vigorous the foetus, the stronger and more lively will be the sensations of its movements. It is evident that the existence, and far less the nature, of the foetal malady cannot be ascertained before delivery; yet, in some instances, it may be suspected, from what is known of the causes. An attack of ague in the foetus is usually made manifest to the mother; but does not generally cause abortion. The feebleness and slowness of the foetal movements, after the fifth month, are indications of impaired strength of the foetus, which should not be overlooked. The total cessation of

motion; a feeling of uncomfortable weight gravitating to the side on which the patient lies, and of general uneasiness and coldness in the lower part of the abdomen; flaccidity of the abdominal parietes subsequent to a certain degree of tension; foetor of the breath, pallor of the countenance, lividity of the eyelids or surrounding circle, and flaccidity of the breasts; generally denote the death of the foetus; and when the pulsation of the heart cannot be heard on auscultation, this event may be inferred with certainty.

BIBLIOG. AND REFER. — *Deuttel*, De Morbis Fœtum. Halæ, 4to. 1702. — *Hoogeven*, Tractatus de Fœtus Humani Morbis, 8vo. L. B. 1784. — *Baumes*, Traité de l'Ictère, ou Jaunes des Enfants, 8vo. Paris, 1806. — *Stewart*, Trans. of Med. and Chirurg. Society, vol. v. p. 144. — *Lawrence*, in Ibid. vol. v. p. 165. — *Hey*, Ibid. vol. vii. p. 536. — *Chaussier*, in Dict. des Sciences Méd. t. xvi. p. 50., et t. xxxiv. p. 232. — *Murat*, in Ibid. t. xvi. p. 49. — *Véron*, Nouv. Biblioth. Médicale, July, 1825, p. 301. — *Brachet*, Journ. Génér. de Méd. Jan. 1828. — *Desormeaux*, Dict. de Méd. vol. xv. p. 396. — *Lobstein*, Repert. d'Anat. &c. t. i. p. 28—141. — *Stratford*, Journ. des Progrès des Sciences Méd. t. xvii. p. 266. — *V. Andry*, in Ibid. t. i. N. S. 130. — *Rossi*, in Ibid. t. iv. p. 119. — *Tonnelle*, in Ibid. t. xiv. p. 251. — *Breschet*, Dict. de Méd. t. i. — *Allouneau*, Nouv. Biblioth. Méd. t. ix. p. 383. — *Geof. Saint-Hilaire*, Archives Génér. de Méd. t. ix. p. 41. — *Kilian*, Ibid. t. xvi. p. 564. — *Dupuytren*, in Archives Gén. de Méd. t. xiii. p. 83., et t. xvi. p. 562.; et Repert. Gén. d'Anat. &c. t. ii. p. 131. (*Congenital luxation of femur.*) — *P. S. Denis*, Recherches Patholog. sur Plusieurs Maladies des Nouveaux-nés, 8vo. Commercay, 1826. — *C. Billard*, Traité des Maladies des Enfants Nouveaux-nés, &c. 8vo. Paris, 1832, 2d edit. — *A. Colson*, Archives Gén. de Méd. t. xviii. p. 24. — *Carus*, in Ibid. t. xvi. p. 444. — *Velpeau*, in Ibid. t. vi. p. 135. 403. 584., et t. xv. p. 626. — *A. Dugès*, Dict. Méd. et Chirurg. Prat. t. viii. p. 290.

FUNGOID DISEASE. — SYN. *Hæmato-cerebriform Disease*; *Milt-like Tumour*, Monro. *Soft Cancer*, Auct. var. *Spongoid Inflammation*, Burns. *Medullary Sarcoma*, Abernethy. *Carcinoma spongiosum*, Young. *Fungus Hæmatodes*, Hey, Wardrop. *Fungoid Disease*, A. Cooper. *Fungus Medullaris*, Maunoir. *Matière cérébriforme*, Auct. Gall. *Carcinome mou et Spongieux*, Roux. *Tumeur Encéphaloïde*, Laennec. *Fongus Médullaire*, Lobstein. *Carcinus Spongiosus*, M. Good. *Carcinome Sanglante*, Cancer mou, Fr. *Der Blutschwamm*, Germ. *Bleeding Fungus*.

CLASSIF. — 3. Class, Sanguineous Diseases; 4. Order, Cachexies (Good). IV. CLASS, IV. ORDER (Author, in Preface).

1. DEFIN. — *A tumour, or tumours, consisting of a whitish, pulpy, brain-like substance; generally soft, circumscribed, elastic, or obscurely fluctuating; giving rise to large vascular growths, which bleed profusely; always connected with constitutional vice; contaminating the frame, and terminating fatally.*

2. i. DESCRIPTION. — This is the most malignant formation to which the body is liable. When it appears covered only by the integuments, and has not yet acquired considerable bulk, the surface of the tumour which it forms is smooth, generally equal, and not discoloured; it is commonly soft and elastic, and communicates to the touch an obscure sense of fluctuation. When removed from the body, the hæmatoid tumour is generally circumscribed, and more or less rounded; it frequently possesses a capsule of condensed cellular membrane. — A. M. LAENNEC has divided the disease into, 1st, the encysted; 2dly, the irregular and non-encysted; to which he has added, 3dly, the interstitial impregnation of organs by the cerebriform substance. This last is not mentioned by Mr. WARDROP, who has described this disease

with great accuracy. M. LAENNEC has never met with it in the lungs. It may be, therefore, considered as a rare form of the disease. When divided, the substance soils the knife, and is composed of an opaque, whitish, homogenous matter, resembling, in colour and consistence, the cerebral pulp. Hence the name, *Encephaloid*, given it by the French pathologists. It softens after exposure for a short time to the atmosphere; and when the softer part is washed away, or when the mass is compressed, a filamentous or fine cellular tissue remains.

3. B. The consistence of the hæmatoid tumour varies in different cases, and sometimes in different parts of the same mass — being sometimes more dense than the firmest brain, at other times as soft as the brain of a foetus, as the milt of a fish, or even not much firmer than custard. According to M. LOBSTEIN, the different degrees of softening is owing to the progress of the disease; and this appears to be generally the case. In the first stage, or that of crudity, the melanoid tumour has the consistence of a firm brain, or of the conglobate glands; in the second, the consistence is less, being that of the foetal brain; in the third, it approaches that of milt or custard: to these may be added a fourth, when the tumour is situated externally, or near the surface of an organ or part, viz. that attended with ulceration and the rapid production of bleeding fungi from the ulcerated part.

4. C. The colour of this production varies sometimes in the same mass. It is commonly of the colour of the brain; occasionally portions of it are redder, and exhibit more of a fleshy appearance; and in other cases, parts of it resemble a clot of blood. When the hæmatoid mass is encysted, it is readily detached from its capsule; and, in the early stage, is often divided into several lobes, placed closely together, and separated by an extremely fine cellular tissue, which seems to convey the vessels for its nutrition. In the advanced stages, the division into lobes disappears. The non-encysted form is, however, more common, particularly in the viscera. The masses constituting this formation vary from the size of a pea to that of the head of a foetus at the full time.

5. D. The medullary structure, although the general, is not the only, form observed in the primarily diseased mass. Some of the fungoid productions are composed of distinct parts provided with cellular capsules, and differing in size, colour, and consistence. Some of these parts resemble slightly softened glue; others have earthy particles mixed with the pulpy cerebriform matter; many present insulated portions of the colour and consistence of boiled yolk of egg. As the tumour increases, the softening and disorganisation characterising the successive stages of its growth takes place. Disorganisation generally commences in the central parts: cavities now form in it, chiefly containing blood; and, when the blood is washed away, and the tumour is placed in water, numerous membranous shreds and filaments are seen floating in these cavities.

6. If the fungoid mass is situate near the surface of any internal viscus, discolouration of, and adhesion to, the part covering it, followed by ulceration, take place. But the ulcerative process, instead of giving rise to loss of substance, produces a fungous growth, and, as well as when the tumour forms exteriorly, the increase of bulk, which had hitherto been slow, now becomes rapid.

The fungus which thus forms is soft, easily torn, of a dark red or purple colour, of an irregular shape, and bleeds profusely when slightly injured; and differs from the firm dense structure of the cancerous fungus. It resembles, when small, the softer kinds of polypous vegetations which form on mucous surfaces. — When the primary hæmatoid tumours are situated towards the surface of the body, they increase in size more rapidly than when seated internally. They generally soon lose their uniform round and smooth appearance; they project very considerably, and at last become irregular at their surface. Their consistence diminishes, particularly in the projecting portions, where the soft elasticity passes into obscure fluctuation. The veins running over or from the diseased mass assume a varicose appearance; an erysipelatous-like redness of the prominent parts supervenes, followed by lividity, adhesion of the integuments to the tumour, ulceration, and soft reddish fungous excrescences. The growth of the tumour is now remarkably rapid. The surface of the fungi exudes a thin fœtid sanies, often with blood, which is sometimes discharged in great quantity; hence arose the name fungus hæmatodes, which applies only to the advanced stage of the malady. When the fungus is very large, its more prominent parts often lose their vitality, and separate in most offensive sloughs.

7. In some cases, the voluntary nerves have been connected with the diseased mass, and have participated in the change of structure; but they have not been found changed beyond the limits of the tumour. In the eye, the optic nerve is always changed in structure; and in a case referred to by Mr. Wardrop, the anterior crural nerve passed into the centre of the diseased mass, and was so completely lost in it, that it was impossible to distinguish between the two structures. This appearance being general whenever large nerves enter into the hæmatoid tumour, has led M. MAUNOIR to infer that the cerebriform matter composing it is nothing else than a morbid accumulation of the nervous pulp. This opinion is combated by M. LOBSTEIN, who avers that he has met with cases in which, particularly in early stages of the disease, the nerves passed through the tumour without experiencing any change. I am, however, disposed to doubt this, at least as respects the fully developed disease: if they pass *through*, I believe, from the dissection of a case which occurred to me, that they are always changed, and identified with the morbid mass: if they pass merely *by* it, or between insulated portions of it, no change will be observed.

8. The most remarkable characteristics of this disease are, 1st, The frequently simultaneous occurrence of a number of the tumours constituting it in different parts of the body; the least connected with each other, either by structure or function: and, 2d, That when an apparently isolated mass of the disease is met with in an extremity and extirpated, it always soon afterwards manifests itself in some distant part, either externally or internally; the subsequent disease being even more rapid in its progress than that preceding it. The simultaneous appearance of the hæmatoid tumours, or their successive manifestation, although sometimes observed to take place in the course of the absorbent system, seem not to be always propagated through this medium; for in

the case of the diseased mass appearing first in one of the lower extremities, the subsequent occurrence of it may not be in the glands above the originally affected part, but in some distant or internal organ, as in the lungs, liver, in an upper extremity, &c. This was well evinced in a most remarkable specimen of the disease which came before me several years since in a lad of about fifteen; who presented in all the extremities, upper and lower, in the parietes of the thorax and abdomen, in his neck and head, a number of those tumours, certainly not under fifty. They varied from the size of a walnut to that of a large orange; many of them were of simultaneous origin, and those which were the latest in appearing did not occur in the seat of the glands of the absorbents leading from the primary tumours. A somewhat similar, and still more remarkable case, in respect of the great extent and number of the tumours, both internal and external, I had lately an opportunity of seeing frequently with Mr. BUSHELL.

9. Often, however, when the original mass is advancing through the changes I have described, the absorbent glands become affected by the disease, and the internal viscera and the whole constitution are contaminated; or, perhaps, it would be more correct to say that the original contamination is thereby so far heightened as to occasion a more general formation of this diseased structure. When the absorbent system is affected, Mr. WARDROP states, that usually one or more glands swell in the vicinity of the primary tumour, and that this takes place sometimes at an early period of the disease, and occasionally not until the primary tumour is far advanced. In some cases the diseased glands grow to a great size, whilst in others they are but slightly enlarged. Occasionally the primary affection makes little progress, whilst the disease of the glands advances rapidly. — The structure of the glands thus secondarily affected is entirely converted into the cerebriform matter, exhibits a homogeneous pulpy mass, and is contained in a cellular capsule. Mr. WARDROP has never observed a fungus arise from the diseased gland.

10. This morbid production may appear in one part only, or in several at the same time, or in distant parts successively. The tumours which first appear may be called *primary*; those which occur afterwards, either in the absorbent glands or in remote parts, may be named *consecutive*. But the disease may terminate fatally without any more than a single mass being developed. Mr. LANGSTAFF has adduced an instance of this. The primary tumour may be small, and the subsequent productions most extensive, or the reverse.

11. There is scarcely any organ or part of the body exempt from this disease. The extremities, the mammæ, thyroid gland, the testes, ovaria, uterus, the lungs, the liver, pancreas, spleen, the stomach, the intestines, the urinary bladder, prostate gland, the mesentery, omentum, the eye, the brain, the spinal cord, the nerves, the glands, the heart, the muscular parts of the trunk, the bones, &c., have all been found affected with this malignant disease. It seems to commence in the cellular tissue; but, as it is developed, the proper texture of parts to which it extends is either converted into it, or is absorbed in proportion as it is increased.

12. ii. PROGRESS AND DURATION. — *a.* The

progress of the disease may be divided into four stages.—In the *first*, the tumour has the consistence of the conglobate glands; in the *second*, it is much softer; in the *third*, the softening is still greater, and amounts to a state of semi-liquefaction, and gives the sensation of fluctuation; in the *fourth*, ulceration or vascular fungi arise.—Signs of general cachexy appear in the second or third stage, and are very decided in the fourth.—*b*. The duration of this malady is generally some months at least; and it may continue for two or three years. In the early stages, it is not usually attended by febrile action, or much pain; and it may exist for a considerable time without occasioning emaciation; but there is always more or less debility. Acceleration of pulse, and emaciation, appear in the advanced stages, often accompanied with effusion into the adjoining cavities, particularly when an internal organ is the seat of the malady, as the liver, uterus, &c.—In the *third* and *fourth* stages, the vital functions are very manifestly affected. The stomach loses its power, or rejects the ingesta. The patient experiences most severe pain; and the energies of life decline. The complexion often assumes a livid, earthy, or peculiar yellowish hue, or pale straw colour; the pulse becomes smaller and weaker; and at last the patient sinks, generally without either delirium or insensibility having existed for any considerable time before death.

13. iii. DIAGNOSIS AND COMPLICATIONS.—This disease was confounded with cancer until the commencement of this century, when BURNS and HEY first remarked the difference between them. They are still considered by some Continental pathologists, and by Dr. CARSWELL, as varieties or modifications of the same constitutional malady; and there are several circumstances which both favour and militate against this opinion. They both occur in similar habits of body and temperaments; they often arise spontaneously, or without any manifest cause, or are traced to the same exciting agents; they are both dependent upon constitutional vice, as well as upon perverted organic action and secretion in their seats; and they both undergo somewhat similar local changes, and occasion an increasing contamination of the fluids and soft solids. Moreover, as I have stated in another place (see article DISEASE, § 141—144.), and as Drs. KERR and CARSWELL have justly remarked, both may co-exist, or the carcinomatous may pass into the fungoid formation. Dr. CARSWELL observes, that numerous examples might be given of scirrhus, medullary sarcoma, and fungus hæmatodes, as they are commonly called, originating in the same morbid state, and passing successively from the one into the other in the order in which they have been named. Indeed, these varieties are sometimes met with, not only in different organs of the same individual, but even in the same organ.

14. The points, however, of dissimilarity are very striking, as remarked in the article referred to (§ 141—144.); and, notwithstanding these circumstances, are sufficient to constitute them distinct diseases. As these points have not been brought into view by the able writers just mentioned, and as they deserve a fuller notice than I have bestowed on them in the sketch indicated above, I shall here state them more fully.—*a*. There is no relation between the hard, incom-

pressible texture of scirrhus, in which carcinoma commences, and the cerebriform, elastic, and soft substance constituting fungoid disease.—*b*. Carcinoma commences in scirrhus, which confounds in one mass all the tissues which it invades, and often without much increase of bulk, although with augmented density; fungoid disease always consists of a more or less evident tumour, which seems to destroy every trace of any other structure.—*c*. Carcinoma, even in an advanced stage, when fungous projections sprout from its ulcerated parts, presents but little vascularity; whereas the fungoid disease possesses large vessels, and vascular cavities, so that it derives one of its most common names from this circumstance.—*d*. Fungoid disease attacks organs in which true carcinoma has not hitherto been seen to originate; as the lungs, the liver, the brain, the spinal cord, and the nervous trunks.—*e*. Cancer affects the aged, fungoid disease the young; and the former is attended with more pain at the commencement than the latter:—and, *f*. as, MM. MAUNOIR, LOBSTEIN, and VELPEAU have remarked, there is something peculiar in the cachexy attending carcinoma, that is not observed in the fungoid malady; for it is not unusual to see persons, labouring under this latter affection, possessing their natural colour. This, I believe, occurs most frequently when some external part only is affected, or when the disease has not invaded the digestive or assimilating organs, or when absorption of the morbid matter has not taken place to a great amount. In a case now under my care, the healthy complexion is preserved, and yet neither the able practitioners who have seen it, nor myself, have any doubt as to its nature.

15. M. LOBSTEIN asks, with reference to the question of the identity of these two maladies, whether, admitting that true cancer sometimes gives rise to the fungoid formation, it therefore follows that this latter is the same as cancer? May there not exist, simultaneously, tuberculous degeneration of the lungs, fungoid disease of the liver, and fibrous tumours in the womb, without inferring the identity of these three morbid formations? Fungoid disease, therefore, appears, from its vascular relations, from its peculiar structure, and from its early characters, its advanced course and terminations, to be a distinct malady, although it may be consequent upon, or complicated with, other alterations of structure. When it occurs in young subjects, it is always *primary*, or is not preceded nor attended by the carcinomatous formation. But in persons past the meridian of life, in whom only scirrhus-cancer or carcinoma is met with, the fungoid structure is sometimes produced *consecutively*, or in an advanced stage of it, and thus occasionally exists as a secondary complication with that disease, or as one of the advanced changes of structure consequent upon the constitutional vice. The question, therefore, as to difference is reduced to this, that, when fungoid disease attacks young persons, it is always a primary and distinct malady; and that, when it affects persons advanced in life, it is either primary, or consecutive of, and complicated with, carcinoma (see art. DISEASE, § 141—144.). In a few instances, other morbid formations besides this have been found associated with the cerebriform structure, as fibrous tumours, scrofulous

matters pus, melanosis, hydatids, osseous and earthy deposits, &c.*

16. iv. CAUSES.—*a.* The *predisposing causes* of fungoid disease are debility of constitution, early age, and peculiarity of diathesis. Children, and persons who have not passed the meridian of life, are much more frequently affected by it than persons in the decline of life. Those of the lymphatic and nervous temperaments, of a scrofulous constitution, of a sallow or pale complexion, and of a lax fibre, with a flabby state of the soft solids, and languid circulation, are oftenest its subjects. As to the influence of sex, sufficient data have not been furnished to admit of an opinion; but the most of several cases which I have seen have occurred in males. The same may be said of the influence of climate; but, like cancer, it seems to

be most prevalent in countries the inhabitants of which partake largely of animal food. It has even been supposed that eating much pork predisposes to it. An hereditary disposition to it may be admitted with more truth. General debility is, however, its most common antecedent.—*b.* The *exciting causes* are often unknown. Sometimes an external injury, as a blow or bruise, has occasioned it, often after a long period. Most of the cases which I have seen appeared to have arisen chiefly from a poor and unwholesome diet, aided by cold and moisture.

17. v. The PROGNOSIS is extremely unfavourable. If the malady is developed so as to admit of precise recognition, a fatal issue may be delayed a short time by a tonic or restorative treatment, but can never be averted. Extirpation, or amputation, has been attempted, but with no benefit, and often with disadvantage. Although the diseased part be removed in this way, its source is still in the constitution, and it soon afterwards is developed in some other situation, generally in an internal viscus, the nearest to the seat of the extirpated part. If it exist also in an internal organ, the shock occasioned by the operation accelerates its growth and fatal progress.

18. vi. ORIGIN.—Many writers on this disease, and especially the French pathologists, suppose that the diathesis in which the disease originates is connected with the cancerous taint; and that the fungoid is only an advanced stage, or higher grade of carcinoma. M. MAUNOIR and LOBSTEIN are opposed to this view; and my opinion, as just stated, coincides with theirs. Although both diseases are distinct as to the *kind* of action, as to the form of the morbid structure that results, and as to some of the circumstances in which it takes place, yet the *manner* in which they both arise may not be different; their morbid actions being similar in some respects, but different in others. Hence the alliance occasionally observed between them; as in other diseases generally connected, but specifically different. The opinion, therefore, which I have stated as to the origin of CANCER (§ 25, 26.), and the remarks there offered, are, in part, applicable to this disease.—Dr. HODGKIN has endeavoured to show that fungus hæmatodes and carcinoma originate in a cystiform serous membrane. That they thus arise in some instances may be admitted; but I agree with Dr. CARSWELL in the opinion that they are often formed independently, and where cysts cannot be detected; and that, even where cysts have existed, their formation in the cellular tissue external to the cysts has been demonstrated.—The views of M. ANDRAL have been stated in the article just referred to, and in that on DISEASE (§ 138.). M. CRUVEILHIER believes that this, as well as some other lesions, are the results of the deposition of morbid products in the cellular tissue of organs, the venous capillary system furnishing these products.

19. Dr. CARSWELL is of opinion that the formation of the fungoid and carcinomatous substance takes place in the blood, whether it be found in this fluid alone or in other parts of the body at the same time; and he adduces the facts—1st, That the morbid substance is found in the vessels which ramify in these malignant tumours, or in their vicinity;—2dly, That it is found in those vessels which communicate with the diseased part of an

*Besides the distinctions I have insisted upon above, SCARPA and BERARD have adduced others, which I may here notice at length. The cerebriform or fungoid structure, when fully developed, is a milk-white pulpy substance, studded with rose-coloured points—scirrho-cancer has the appearance of the skin of brawn, and is traversed by numerous cellulo-fibrous radii or bands. The former comprises a number of arterial vessels, that increase with the softening which it undergoes; extravasations of blood take place in its substance; and the ulceration of its advanced stage is accompanied with hæmorrhage, which is often repeated, and frequently profuse;—the latter is nearly deprived of vessels; sanguineous extravasation is seldom observed in it; and the ulceration to which it gives rise is rarely attended by any considerable hæmorrhage. The cerebriform substance is often found in the veins of the diseased part—sometimes nearly filling them—and occasionally, also, in those in the vicinity;—a similar circumstance is very seldom observed in scirrho-cancer. The cerebriform disease attacks primarily all the systems, tissues, and organs of the body; the primary seat of carcinoma is much more limited. The former attains a great size, is lobulated, and presents a characteristic elasticity and softness;—the latter never reaches a great size, it even sometimes assumes the appearance of diminished bulk, with increased density, and has neither a rounded outline nor elasticity.—Fungoid tumours frequently co-exist, even primarily, in several organs—occasionally in considerable numbers;—carcinoma is generally solitary. The cerebriform disease softens into a rose-coloured *bouillie*; scirrhous assumes the form of a *jelly*. In their progress to the surface, the first stretches the skin, and renders it thinner, without adhering to it; the second cements itself to the integuments, which no longer admit of motion, but is firmly attached to the diseased mass. The progress of ulceration in this is remarkably slow; in that very rapid. In the one, the period which elapses from the commencement of ulceration is often as long or longer than that which preceded this change; in the other, the period subsequent to ulceration is disproportionately short, and the lesions consequent upon it are of a much more acute and violent character, though the pain may be less.

It is in the early stage, or state of crudity, that these two maladies are distinguished from each other with greatest difficulty. The fungoid structure has not then attained the white colour it subsequently acquires. It is at first semi-transparent, firm, and divided into numerous lobules. Its vascularity is also not so great as at an advanced stage. But, although it thus resembles scirrhous, to conclude from this, that they are identical diseases, is to admit that the same lesion will give rise to two kinds of structure that essentially differ. But this stage of fungoid disease is very short; and in cases where a number of tumours are developed in different parts of the body, they all have the same cerebriform structure. Malignant disease may, however, present the *complicated states* above mentioned; the same tumour consisting partly of the carcinomatous and partly of the cerebriform structure. In addition to these, it may even comprise other morbid products, disseminated through it, or collected in one or more places—in one part an adventitious fibrous tissue, in another a fibro-cartilaginous formation, in a third tubercular matter, in a fourth multilocular cysts containing various substances—here a gelatinous secretion, there a milky fluid, this a reddish or bloody matter, that an osseous or a cretaceous deposit. These, as well as the cerebriform products thus accidentally or occasionally comprised in carcinomatous or malignant tumours, are not the constituents of carcinoma, but contingent formations consequent upon the morbid nutrition and secretion constituting the local disease.

organ;—and, 3dly, That it is met with in vessels having no direct communication with an organ affected with the same disease. The veins, however, and venous capillaries, are the only parts of the vascular system in which the diseased substance is found—sometimes in contact with the internal surface of the vein, or occasionally united with it by means of thin colourless fibrine, or even of very minute blood-vessels, as in the case of the cerebriform matter. In the articles referred to, I have stated that, when this morbid substance is detected in the blood, it has been absorbed, as in the case of other morbid secretions; and the accuracy of the opinion seems to be supported by the fact, that it is found only in the veins and absorbents; but Dr. CARSWELL believes that this is not the case, as there are instances in which the venous blood alone was the seat of the disease. If such be actually the case, an obvious difficulty presents itself; but various sources of deception arise in the course of minute researches, and mislead even the most careful. That the blood is early affected in this and other malignant diseases, I fully believe; but that the cerebriform matter is formed in it, and afterwards deposited in the parts which are its seats, cannot be supported by the history and progress of the local and constitutional affections. If it were previously formed in the blood, wherefore is it often deposited only in one situation?—wherefore is it not excreted by the emunctories?—wherefore does it not always affect a number of parts simultaneously?—wherefore is it never found in the arteries, and so frequently in the absorbents and veins proceeding from the seat of disease?—These, and other questions that may be asked, cannot be answered consistently with this doctrine. I therefore entertain the same opinion as was stated by me in the articles already referred to, and believe that, like carcinoma, it essentially depends upon a debilitated and otherwise morbid state of the system generally; and that the vital actions of the part or parts primarily and especially affected are depraved—that the nutrition, organic sensibility, and the secreting function of these parts are remarkably altered, and that the morbid product which results is partially absorbed into the circulation, and contaminates the fluids and soft solids, sometimes exciting a similar morbid action in other situations.

20. Conformably with the best ascertained facts connected with the appearance of the cerebriform matter in the vessels, it would seem, that, at a somewhat advanced stage of the disease, or when this structure becomes more or less softened, the molecules of it pass into the veins and absorbents leading from the part in which they have been formed; that they there sometimes are aggregated into masses sufficiently large to admit of their recognition; that, although these masses are generally found merely in contact with the internal surface of the veins, they sometimes adhere to it by means of the fibrine which collects around them, as in every other instance in which a semifluid or partially concrete substance, or a secreted matter of greater consistence than the blood, passes into the circulation; and that, when they thus adhere to the internal surface of the veins, minute vessels are ultimately developed in the fibrinous envelope which has been formed around them.—The principal changes observed

in the blood of those affected by this disease, and which I have had an opportunity of remarking in two cases after death, are, an unusual thinness—a deficiency of fibrine and red particles—a state of partial anæmia—and imperfect coagulation. This state has been also remarked by BÉCLARD, VELPEAU, ANDRAL, and KERR, whose observations respecting the presence of the cerebriform matter, surrounded by a fibrinous envelope, in the venous blood, fully confirm the view I have taken of its origin in this situation, and militate against its primary formation in this fluid. (See articles CANCER, § 26.; and DISEASE, § 141.)

21. vii. TREATMENT.—This is a subject on which much cannot be said with any hope of advantage. Surgical treatment is of no avail, and strictly medical means of very little more. Whatever excites pain, or irritates the local disease, tends to promote its growth; and whatever lowers constitutional power, only lays the system more open to contamination. The intentions, therefore, which we should propose to ourselves, when entering upon the treatment of this malady, are—1st, to support the powers of life, and thereby to resist as long as possible the extension of the disease;—2dly, to promote the secretions and excretions, as auxiliary to the first indication;—and, 3dly, to palliate the sufferings of the patient.

22. A. The first of these is founded upon the evident and admitted fact that the disease is dependent upon, and associated with, debility; and upon the results of observation; and the means which may be employed to fulfil it need not be materially different from those specified in the article CANCER (§ 29. *et seq.*). Although no medicine has hitherto proved successful in curing the malady, yet new remedies, or novel combinations of those that are old, should nevertheless be directed against it. Besides, judicious means have often prolonged life, or enabled the system to resist its progress for a time. Conformably with these views, the preparations of cinchona; the sulphate of quinine; the preparations and compounds of iron, particularly the ferrum ammoniatum, and the muriated tincture; sarsaparilla; bitter tonic infusions or decoctions, with liquor potassæ, or the alkaline subcarbonates; and the preparations of iodine,—may be severally used, and combined with some one of the more energetic narcotics, particularly the acetate or muriate of morphine, or conium, or belladonna, or aconitum.—The preparations of iodine are the most successful of any means I have employed, in resisting the progress of this morbid formation. The ioduret or iodide of iron, and the hydriodate of potash, should be selected, and taken internally in small or moderate doses. The external use of iodine is often injurious. In a case of this disease, affecting chiefly the stomach and some others of the abdominal viscera, lately under my care, a combination of the acetate of morphine and kréosote palliated the urgent symptoms after other means had failed. In the still more recent case of a lady from Wales, who came to town on account of malignant disease of the stomach, that probably partook of the fungoid character, from the size of the tumour and other symptoms, this combination proved serviceable. This lady had been treated with great discrimination by Mr. SERPH of Welshpool. During her stay in London, the acetate of morphine in a dilute aro-

matic spirit always afforded relief; but, when the disease had advanced further, and after her return home, it had but little effect. Mr. SERPH therefore, at my request, gave her the following during the paroxysms of suffering, with great benefit. —

No. 227. R. Morphinae Acetatis gr. ij.; Kréosite M xij.; Pulv. Glycyrrh. et Pulv. Acaciae, aa q. s. ut fiat massa æqualis, quam divide in Pil. xij. Capiat unam, omni horâ, urgenti dolore.

23. When the diseased part appears about to ulcerate, and afterwards especially, it should be protected from external injury or irritation; and if the bleeding from it be copious, or the discharge offensive, a solution of kréosite in weak pyroligneous acid or spirits of turpentine will prove the most efficient styptic and corrigent. The chloride of lime may likewise be employed. In addition to the other tonics just enumerated, the chloride of potash may be tried in the decoction of cinchona. If iodine be prescribed, it should be continued for a long time. The hydriodate may be given in the compound decoction of sarsaparilla; with conium, aconitum, or any other narcotic, if much pain be felt. During the course of treatment, the secretions and excretions should be regularly promoted; and if the bowels be sluggish, their actions ought to be promoted by a tonic or stomachic aperient repeated according to circumstances. The other means, which have been recommended in the article CANCER (which see), are equally appropriate in this, and other malignant formations.

BIBLIOG. AND REFER. — *J. Burns*, Dissert. on Inflammation, vol. ii. p. 302. — *Hey*, Practical Observat. on Surgery. Lond. 8vo. 1803. — *J. Abernethy*, Surg. Observations. Lond. 1804. — *S. Wardrop*, Observat. on Fungus Hæmatodes or Soft Cancer, 8vo ed. 1809; and his edition of the Works of *Dr. Baillie*, vol. ii. — *Laennec*, Dict. des Sciences Médicales, art. *Encéphaloides*. — *A. Monro*, Morbid Anatomy of the Human Gullet, &c. Edin. 1811. — *C. Bell*, Surgical Observat. part iv. — *G. Langstaff*, in Trans. of Med. and Chir. Soc. vol. viii. p. i. — *Wardrop*, *Earle*, and *Lawrence*, in *Ibid.* vols. iii. and viii. — *Hodgkin*, in *Ibid.* vol. xv. p. 265. — *C. Bell*, in *Ibid.* vol. xii. — *Roux*, Relation d'un Voyage à Londres en 1814. — *Maunoir*, Mém. sur les Fongus Médull. et Hémat. Genev. 1820. — *Cruveilhier*, Essai sur l'Anatom. Pathol. t. i. p. 82; and Anat. Pathol. &c. liv. iv. viii. — *Bartky*, Observ. Sing. Fungi Medul. in Corde, 8vo. Halle, 1821. — *Breschet* et *Ferrus*, Dict. de Méd. t. iv. — *Berard* et *Begin*, Dict. de Méd. Prat. art. *Cancer*, t. iv. — *A. Scarpa*, in Archives Gén. de Méd. t. x. p. 277. — *Andral*, Anat. Pathol. t. i. p. 219. — *J. A. Recamier*, Recherches sur le Trait. du Cancer, &c. 2 vols. Paris, 8vo. 1829. — *A. Cooper*, Lectures, in Lancet, vol. ii. p. 399; and Illustrations of Diseases of the Breast. Lond. 4to. 1829. — *J. J. Lobstein*, Traité d'Anat. Pathol. t. i. p. 419. — *E. Home*, On the Format. of Tumours, &c. 8vo. Lond. 1830. — *W. Kerr*, in Cyclop. of Pract. Med. vol. ii. p. 298. — *R. Carswell*, in *Ibid.* vol. iii. p. 657; and Illustrations of the Elementary Forms of Disease, fascic. ii. & iii.

FURUNCULAR ERUPTIONS. — SYN. *Furuncular Inflammations*; *Furuncles*; *Furunculi*; *Furunculus*, Sauvages. *Phyma*, Willan, Good. *Phylis furunculosa*, Young.

CLASSIF. — 3. Class, 2. Order (Good). 7. Order, 1. Genus (Willan). IV. CLASS, IV. ORDER (Author).

1. DEFIN. — *Inflammation of the cellular appendices penetrating the reticular texture of the corion, arising from disorder of the digestive organs, and modified in character by the state of constitutional power, and the condition of the circulating fluids.*

2. The true skin or corion is penetrated by small conical prolongations derived from the cellular tissue underneath. With these, the vessels and nerves proceed to the superficies of the corion to form the papillar tissue and vascular rete.

When inflammation commences in one or more of these prolongations, furunculus or boil, hordeolum or sty, and anthrax or carbuncle, are the results; but in these, the surrounding true skin, with the subjacent cellular tissue, participate to a greater or less extent with the progress of inflammation. M. RAYER remarks, that, left to themselves, these affections always terminate in the mortification, and subsequent expulsion of one or more of the small cellular cones of the dermal tissue, which are then designated by the title of *cores*. This termination is generally ascribed to the resistance offered by the fibrous corion to the expansion of the cone of inflamed cellular tissue, and to the consequent strangulation of it; but the *cores* are probably the condensed tissue surrounding the matter which is formed in the inflamed tumour, and which is thrown off after this matter is discharged. It is even possible, that the inflammation in this affection commences in the vessels themselves which accompany the cellular elongations or cones; and that the disease is actually a limited angeitis, or arteritis, of one small branch, the cellular substance sloughing in consequence of its supply of blood being cut off, from an impervious state of some of the minute ramifications.

3. The varieties of furuncle are generally dependent upon disordered states of the digestive functions, and the characters which they assume vary with the states of vital action and of the circulating fluids. When furuncle occurs in a tolerably sound constitution, and healthy condition of the blood, it assumes a *sthenic* character, and constitutes *furunculus* or the *common boil*, or *sty* when it is seated in the eyelid. But, when it affects the aged or debilitated, or previously diseased, or the cachectic, or those in whom the circulating fluids are impure, and the vital actions languid or imperfect, it puts on an *asthenic* form, and gives rise to two varieties; one of which has been noticed only by M. GUERSENT and myself, and which may be called *Asthenic Furuncle*; the other has been usually named *Anthrax* or *Carbuncle*.

1. STHENIC FURUNCLE — *Boil*; *Furuncle*; *Phyma Furunculus*, Good; *Furoncle*, Clou, Fr.; *Die Beule*, Germ.

4. This species is characterised by small inflammatory swelling of the skin and subjacent cellular tissue; this swelling being circumscribed, conical, hard, red, hot, and painful; and terminating in the formation of a small quantity of matter, and the expulsion of dead cellular tissue.

5. i. Symptoms. — This affection begins in a small, hard tumour, most frequently seated on the hips, buttocks, thighs, back, nape of the neck, and armpits. The tumour becomes conical, painful, of a vivid or violet red colour, and reaches, in a few days, the size of a large walnut. From the fifth, to the eighth day, it points, the apex becoming white and soft. It soon afterwards breaks, and discharges a little sanguineous pus, the outer part of the slough being exposed through the small opening. The core or slough is generally expelled two or three days afterwards, and the pain then ceases, the swelling subsides, the cavity left by the core fills up, and, in a few days, the opening closes, a cicatrix only remaining. One boil is often followed by others, which follow a similar course, and attain various sizes. They

may succeed one another more or less rapidly ; but they are seldom attended by fever, unless they are large or numerous. When they form in the perinæum, or near the anus, difficulty of voiding urine is often felt. In other situations, they may affect the lymphatics proceeding from their seats, and the adjoining glands.

6. ii. *Causes*.—The application of blisters, frictions with irritating liniments or ointments, inattention to personal cleanliness, the use of sulphureous or alkaline baths, and various antecedent or associated affections, are the usual causes of this eruption. Furuncle is often consequent upon the decline of, or convalescence from, fevers, the exanthemata, and inflammatory disease of the skin ; and it often seems to depend upon weakness, or chronic inflammatory irritation, of the digestive organs ; or upon accumulation of sordes in the *prima via*. In some cases, however, it occurs without appreciable antecedent disorder.

7. iii. *Treatment*.—But little is required for this complaint beyond attention to the digestive organs. Accumulations of mucous sordes and faecal matters ought to be freely evacuated by an aperient consisting of equal parts of the compound infusions of gentian and senna with a neutral salt or alkaline subcarbonate. A bread and water poultice, or any other soothing and relaxing application, may be kept on the part. If the boil be large, and the pain considerable, the division of the skin, at the most prominent part, will be of service. When a succession of boils appears, an emetic may be given, and its operation promoted by the infusion of chamomile flowers. The above stomachic aperient may be afterwards continued daily, or on alternate days. If the eruption still appears from time to time, gentle tonics may be prescribed. Dr. FOSBROOKE recommends large doses of sulphuric acid. Mr. COPLAND HUTCHISON informed me, that he found the liquor potassæ, or Brandish's alkaline solution, in any bitter tonic infusion, most beneficial in these cases. The extract of taraxacum may be added to a mixture or draught of this kind, and an alterative pill given at bedtime, and continued for some days.

8. II. HORDEOLUM.—*Stye* ; *Phyma Hordeolum*, Good ; *Sclerophthalmia*, σκληροφθαλμία ; *Orgeolet*, Fr. ; *Gerstenhorn*, Germ.—is a small inflammatory tumour or boil in the free edge of the eyelids, most frequently near the inner angle of the eye.—It is in every respect a similar affection to furuncle, the difference arising entirely from the nature of its seat. It is seldom larger than a grain of barley, and is generally smaller, as its name indicates.—Its *causes*, *progress*, and *treatment* are in all respects the same as those of common boil.—This, and the preceding variety of furuncle, are most common in young persons, just before or soon after puberty, and in adults who eat largely and take much spirituous liquors.—In scrofulous constitutions, and persons addicted to intemperance, they assume a chronic form. In such cases, local applications with camphor are of service.

9. III. ASTHENIC FURUNCLE.—*Atonic Furuncle* ; *Furuncle Atonique*, GUERSENT—consists of a small circumscribed swelling of the skin, in one or several situations, with or without livid discolouration ; followed by a very small purulent phlyctæna, at the summit, and by softening, destruction, and large perforation of the corion under-

neath ; and preceded and attended by much debility and low fever.

10. This affection was described by M. GUERSENT, in 1823 ; and early in the same year I saw two cases of it, with Mr. PAINTER, in a low street and ill-ventilated apartment in Westminster. Both occurred in unhealthy children in the same family, and terminated fatally. The bodies were inspected after death. Since then I have seen only three other cases, but I have met with others somewhat similar, consequent on the application of leeches.—All the instances which have occurred in my practice, as well as those seen by M. GUERSENT, were in children much weakened by previous disease ; or in those affected by gastro-intestinal irritation, or by chronic disorder of the bronchi, or asthenic inflammation of the substance of the lungs. There have always been, both before and after the appearance of this eruption, well-marked symptoms of adynamia ; and coma has generally come on before death.

11. i. *Description*.—This eruption appears chiefly on the trunk, the lateral parts of the neck, and insides of the thighs. In the cases which I have seen, the number of furuncles was considerable—not fewer than five or six ; and, in two cases, there were about twenty. They commence in small, circumscribed, and hard swellings, of a livid tint, but sometimes nearly colourless. At a further advanced stage, very small purulent phlyctæna appear in their summits, that break, and leave the skin underneath of a greyish colour, softened, and perforated as in common furunculi. They discharge at first a serous, sanguineous, or ichorous fluid. The tumours soften and disappear ; and the perforations of the chorion enlarge rapidly, producing, in two or three days, holes in the integuments, varying from three or four, to six or seven, or even eight or nine, lines in diameter. These perforations are perfectly round ; their margins are not elevated, nor thickened, nor injected ; and they entirely resemble the holes made by a drill or auger. The cellular tissue is not thrown off in the form of a core, but is destroyed by a rapid ulceration, or phagedenic absorption. The bottoms of the ulcers have a greyish or sanious appearance, and are nearly dry. There is no discharge from them, nor have they any tendency to scab ; and the perforations of the integuments frequently proceed down to the muscles, or aponeuroses, the peculiar structure of which may often be seen at their bottoms. The skin forming their margins is pale and somewhat softened, and the cellular tissue immediately beneath the cutaneous margins is often destroyed to the extent of one or two lines.—In the variety of asthenic furuncle following the bites of leeches in cachectic and debilitated children, which is the most common, the perforations of the skin are at first triangular, but their progress is nearly the same as that of the spontaneous variety, and as they enlarge they become entirely circular. The ulceration attending upon the advanced stage of disease is seldom very painful. Having reached the extent just described, it remains stationary for a longer or shorter time, and in the more unfavourable cases shows no disposition to reparation. When it evinces a disposition to heal, the bottom is more moist, somewhat redder, and more vivid ; the perforated margins of the skin become more closely connected with the subjacent tissues,

granulations arise and elevate the bottom of the ulcer, and the perforation is lessened. Thus a depressed cicatrix is formed, as in other cases where the skin has been destroyed.

12. In the two cases, in which I had the opportunity of seeing the appearances after death, no attempts at reparation were visible in the ulcerated perforations, which went down to the muscles, as if the part had been removed by an auger. There was no injection or inflammatory appearances in the margins. The chief alterations were moderate emaciation, congestion, and injection of the membranes of the brain, with slight serous effusion; congestion of the substance of the lungs, with limited hepatization in an early grade; patches of injection in the digestive mucous membrane, other parts being pale; and enlargement of the mesenteric glands. M. GUERSENT has not mentioned the internal lesions he may have observed; but those just noticed throw not much light upon the affection, and are of frequent occurrence after other diseases. In most of the cases I have treated, there has been low nervous fever, with more or less manifest affection of the gastro-intestinal surface, or of the head or lungs. The perforations are always uniform in character, although varying somewhat in size; they are peculiar; and are hardly ever modified from the state above described. They appear analogous to the perforating phagedenic or atonic ulcers sometimes seen in the stomach.

13. iii. *Treatment*.—The means of cure should necessarily be directed chiefly to the constitutional disorder. This should be removed, by the preparations of cinchona; by the sulphate of quinine; by the mineral or vegetable acids; by camphor or ammonia; by the decoction of bark with nitre, and spirits of nitric ether; by the infusion of valerian or cascarrilla with the chlorate of potash, or chloride of ammonia, and chloric ether; by camphor julap with the chloro-sodaic solution; or by similar remedies, aided by means calculated to relieve internal complications, as alteratives, external derivatives, and mild stomachic purgatives. Neither leeches nor blisters should be applied, as the former are liable to multiply the perforating ulcers, and the latter are apt to produce sphacelation. The semicupium, however, with much salt and mustard in the bath, may be used. Removal to a dry, healthy atmosphere, or to the sea-side, or to an elevated situation, and light nourishment, are also beneficial. The most efficacious local applications are, the solutions of the chlorurets of soda or lime, kréosite, the dilute acids, pyroligneous acid with camphor and kréosite, poultices of powdered bark, with spirits of turpentine, and the balsams and terebinthines, especially Peruvian balsam, or equal parts of it, or of copaiba, and of turpentine.

III. CARBUNCLE — Ἀνθράξ, Hippocrates; *Anthrax*; *Carbo*; *Persicus Ignis*; *Carbunculus*, Celsus; *Phyma Anthrax*, Good; *Charbon*, Fr.; *Karbunkel*, Germ.; *Furuncular Anthrax*.

14. Carbuncle appears in the form of a hard, painful, circumscribed tumour of a deep red colour, with a sensation of burning heat, terminating in gangrene. M. RAYER states that it is an acute inflammation affecting simultaneously several of the contiguous cellular cones penetrating the reticulations of the true skin. It is not improbable that the vessels themselves, particularly the arteries,

are more or less implicated in the inflammation.

15. i. *Progress*.—Anthrax occurs most frequently in the nape of the neck, or above the nape, on the back, shoulders, buttocks, thighs, and sides of the trunk. It often commences in a small tumour, of a few lines in diameter, the apex of which is sometimes covered with a sanguinolent vesicle. In other cases it is much larger from the beginning, and it then generally advances with greater rapidity. As it spreads, so it becomes more prominent and penetrates more deeply; and, in seven or eight days, it is often as many inches in diameter. Its colour deepens to a violet or bluish tint, and it is hard throughout, until the cellular tissue of the central parts passes into gangrene. Its base afterwards continues to spread, the circumference remains hard, and the centre softens, and fluctuates very obscurely. The heat is still burning, the pain is tensive, and both are now referred chiefly to the base of the tumour. When left to itself, the skin covering the anthrax becomes thin and soft after some days, and is perforated in several places. It then discharges a little bloody pus, or ichorous matter with small shreds of mortified cellular tissue. It occasionally sphacelates to a much greater extent, and its surface becomes dark, black, and insensible. For some days afterwards, new perforations are formed, through which whitish sloughs of cellular substance are passed. The openings enlarge or run into each other; give passage to a thick sanguinolent matter; and sometimes emit a foetid odour. The sloughs are at length detached, the discharge increases and becomes thinner, and the pain and heat diminish. When the destruction of the integuments is considerable, the superficial fascia are often denuded, eroded, and even perforated—the surrounding skin being livid, bluish, thinned, and partially detached from the parts underneath. If a favourable change in the part takes place, granulations appear; and a cicatrix, which is always irregular, depressed, and puckered, and continues long dark, or brownish red, is formed, partly by the ulcerated surface, and partly by the union with it of the loose flaps of skin.

16. The constitutional symptoms are generally severe, and often precede the local lesion. Indeed, anthrax rarely occurs excepting in habits of body evincing more or less cachexy, with sanguineous plethora, and disorder of the digestive functions. For some days before its eruption, the patient complains of anorexia and increased disorder of these functions, and of lassitude, chills, or shiverings. With the development of the tumour, the febrile commotion increases, and presents the usual concomitants of inflammatory fever. If sphacelation takes place, or if the ulceration is protracted, the attendant fever assumes gradually an adynamic character; and in delicate, old, or very cachectic persons, it is nervous or adynamic from the commencement.

17. Various internal affections may also be complicated with the external disease. Congestions or inflammations of the liver or of a portion of the lungs, enlargement of the spleen, and gastro-intestinal disorders, are the most frequent associated complaints. When anthrax is seated in the neck, cerebral symptoms are often present. If it occur in the lateral or anterior parts of the neck, dyspnoea, cough, headach, and even serious

affections of the larynx or trachea, are experienced. If it take place in the parietes of the chest, the most severe pleuritic and pulmonary symptoms sometimes supervene, from the extension of the inflammation internally to the pleura, and thence even to the lungs. When it attacks the abdominal parietes, peritonitis has even occurred in a similar manner. Anthrax may also be associated with some other external eruption, especially with the common furuncle, which may either precede or accompany it.

18. ii. *Causes*.—Anthrax is most common in spring and summer, according to M. RAYER. It is certainly most frequent in persons past the meridian of life, and in females about the total cessation of the menses. High, rich, or gross living, with insufficient exercise, and a full, gross habit of body, predispose to it, and even more directly produce it.—Causes which derange the digestive and biliary functions, the application of acrid or stimulating matters to the skin, neglect of personal cleanliness, and the bites of insects, most commonly excite it. It is often a sequela of small-pox, measles, and typhoid fevers; and it is a common attendant upon plague, and sometimes even appears in the latter stages of the putro-adyynamic form of typhoid fever.

19. iii. *Diagnosis*.—Carbuncle is to be distinguished from the common boil, by the latter having only a single opening, and being smaller and more conical; and by several occurring in succession. The former, on the contrary, is broader, less acuminate, is perforated by several openings, is darker, and more gangrenous, and is generally single when occurring as an idiopathic disorder. According to DUPUYTREN and RAYER, however, anthrax is a tumour formed by the conglomeration and confluence of several furuncles. Carbuncle has very generally been confounded with malignant pustule, or anthracion. The latter belongs to a different order of affections of the skin; and is described, as well as distinguished from anthrax, in the article PUSTULES.

20. iv. *Treatment*.—This should be commenced with the exhibition of an *emetic*, the operation of which may be promoted by a tepid infusion of chamomile flowers. A full dose of *calomel* and *James's powder* should afterwards be given, and the free action of the bowels promoted by *purgatives*. Whenever the pulse is strong, full, or hard, *bloodletting*, according to the age and habit of the patient, is requisite, particularly early in the disease. *Leeches* ought also to be applied around the base of the tumour, and the bleeding from their bites encouraged by tepid fomentations. A repetition of the local depletions may be required even oftener than once. *Diaphoretics*, with tartarised antimony and *opium*, if the pain and burning be very severe, should afterwards be given, and the bowels kept open by the occasional exhibition of a purgative. When the attendant fever is of a low form, or when gangrene has taken place, and suppuration continued for some time, especially when the patient is aged, of a cachectic habit, or is addicted to intoxication, or is greatly debilitated, the decoction of *cinchona*, with the *alkaline subcarbonates*; the

sulphate of quinine with *camphor*; tonic infusions with *muriatic acid*, and *chloric ether*; and the means advised in putro-adyynamic fever, should be prescribed, with light nourishment, wine, &c.

21. The *local treatment* should consist chiefly of refrigerant applications in an early stage of the swelling. Compresses moistened with equal parts of pyroligneous acid and rose-water, to which some camphor has been added, should be constantly applied from the commencement. They generally relieve the pain and burning heat. If the inflammation still proceeds, a *crucial incision*, completely across the swelling, and down to its base, as advised by DUPUYTREN and RAYER, should be made. This will give instant relief by the loss of blood, and by removing the strangulation of the vessels and cellular tissue. It also averts gangrene, facilitates a healthy suppurative action, and hastens granulation and recovery. The actual and potential cauteries formerly advised, are now rarely employed. Several American writers recommend the application of *blisters* over the swelling—the discharge from the surface favouring a return of healthy action in the diseased part.

22. When anthrax is *complicated* with any of the internal affections indicated above (§ 17.), the treatment ought to be decided and appropriate to the morbid associations, as the progress of the complication is generally rapid, owing to the unfavourable state of constitution giving rise to this kind of local disease.—During *convalescence*, sulphureous baths, and the aperient sulphureous mineral waters, with strict attention to the functions of the digestive organs, and to *diet* and *regimen*, are usually productive of benefit. I have found the following medicines of service, when the patient cannot resort to suitable mineral waters.

No. 228. R. Infus. Sennæ Comp., Infus. Gentianæ. Co. āā 3vj.; Sodæ Sub-carbon. gr. xij.; Spirit. Ammon. Arom. ʒss.; Tinct. Cardamom. Co. ʒj. M. Fiat Haustus, alternis noctibus sumendus.

No. 229. Potassæ Supertart. in Pulv. ʒj.; Sulphuris Præcipitat. ʒiij.; Confect. Sennæ ʒij.; Syrup. Zingiberis q. s. ut fiat Electuarium molle, cujus capiat Coch. j. minimum, horâ somni quotidie.

BIBLIOG. AND REFER.—i. FURUNCLE.—*Celsus*, De Re Medica, l. v. ch. 28.—*Bichat*, Anat. Générale, t. iv. p. 687.—*Fosbrooke*, in Edin. Med. and Surg. Journ. vol. xviii. p. 64.—*Daynac*, Rév. Médicale, Sept. 1829, p. 416.—*Rayer*, Théoret. and Pract. Treat. on Diseases of the Skin, by R. Willis, p. 542.—*Lassus*, Pathol. Chirurg. t. i. p. 16.—*Richerand*, Nosogr. Chir. t. i. p. 123.—*W. Gibson*, Institutes of Surgery. Philad. 8vo. 1824, vol. i.—*Chelius*, Handb. der Chir. b. i. p. 74.—*M. Good*, Study of Med. by Cooper, vol. ii. p. 350.—*F. G. Boisseau*, Nosographie Organique, t. iv. p. 91.—*J. Green*, Pract. Compend. of Dis. of the Skin. Lond. 1835, p. 268.

ii. ASTHENIC FURUNCLE.—*Guersent*, in Archives Générales de Médecine, t. i. p. 336.—I find, upon reference to the *London Medical Repository*, for July, 1823, p. 32., that I described this eruption in the *London Medical Society*, at the commencement of that year; and that soon afterwards M. GUERSENT's paper respecting it appeared in the *Archives*. It was thus noticed, for the first time, almost simultaneously by this physician and myself.

iii. CARBUNCLE.—*Celsus*, l. v. sect. 28.—*A. Tosi*, De Anthracæ seu Carbunculo Tractatus, 4to. Venet. 1576.—*C. P. De Herrera*, De Carbunculis Animadvers. 4to. Pintæ, 1604.—*T. D. Mitchell*, New York Med. and Phys. Journ. 1815, vol. ii. p. 64.—*J. B. Beck*, in Ibid. 1823, vol. ii. p. 37.—*D. Hosack*, Essays on Various Subjects. N. Y. 1824, vol. ii. p. 256.—*A. Cooper*, Lectures, Lancet, vol. i. p. 245.—*Sanson*, in Dict. de Méd. et Surg. Prat. t. iii. p. 26.—*Marjolin*, Dict. de Méd. 2d edit. Paris, 1833, art. Anthrax.—*Dupuytren*, Leçons, Lancette Française, Mars, 1833.—*Rayer*, Opus cit. p. 549.—*R. Coates*, in Amer. Cyclop. of Pract. Med. vol. ii. p. 29.—*J. Green*, Opus. cit. p. 270.

END OF THE FIRST VOLUME.

LONDON :

Printed by A. SPOTTISWOODE,
New-Street-Square.